



Containerboard Interlaboratory Testing Program

Participant Summary Report #620 (E) - May 2021

[Introduction to the Containerboard Program](#)

[Explanation of Tables and Definitions of Terms](#)

Analysis	Sample	Analysis Name
<u>201</u>	<u>BX15</u>	<u>Top to Bottom Box Compression Strength, Corrugated Boxes</u>
<u>202</u>	<u>EC13</u>	<u>Edgewise Compressive Strength, by T811, Corrugated Board</u>
<u>203</u>	<u>EC13</u>	<u>Edgewise Compressive Strength by T839, Corrugated Board</u>
<u>205</u>	<u>42F3</u>	<u>Bursting Strength (Mullen), 42 lb Linerboard</u>
<u>206</u>	<u>56G2</u>	<u>Bursting Strength (Mullen), 56 lb Linerboard</u>
<u>215</u>	<u>42F3</u>	<u>Ring Crush, 42 lb Linerboard</u>
<u>216</u>	<u>56G2</u>	<u>Ring Crush, 56 lb Linerboard</u>
<u>223</u>	<u>42F3</u>	<u>STFI, 42 lb Linerboard</u>
<u>224</u>	<u>56G2</u>	<u>STFI, 56 lb Linerboard</u>
<u>228</u>	<u>42F3</u>	<u>Roughness - Stylus Method, 42 lb Linerboard</u>
<u>229</u>	<u>42F3</u>	<u>Roughness - Sheffield Method, 42 lb Linerboard</u>
<u>231</u>	<u>42F</u>	<u>Internal Bond, 42 lb Linerboard</u>
<u>234</u>	<u>42F</u>	<u>COF Inclined Plane (Slide Angle), 42 lb Linerboard</u>
<u>237</u>	<u>42F</u>	<u>Air Resistance, 42 lb Linerboard</u>
<u>240</u>	<u>CM11</u>	<u>Flat Crush Strength (CMT), 26 lb Corrugating Medium</u>
<u>250</u>	<u>CM11</u>	<u>Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium</u>
<u>255</u>	<u>CM11</u>	<u>Ring Crush (RCT), 26 lb Corrugating Medium</u>
<u>261</u>	<u>CM11</u>	<u>STFI, 26 lb Corrugating Medium</u>

Collaborative Testing Services, Inc.
CONTAINERBOARD INTERLABORATORY TESTING PROGRAM

INTRODUCTION

The Interlaboratory Testing Program for Containerboard is operated and maintained by Collaborative Testing Services, Inc. (CTS), with technical guidance provided by the Containerboard Group of the American Forest & Paper Association. The tests are conducted on a monthly basis.

For these tests samples of linerboard and corrugating medium, that each have been separately randomized from narrow rolls, are distributed for testing weekly. One weight of medium (26 lb.) is used for Concora Flat Crush Strength, Corrugated Fluted Crush Strength, Ring Crush Strength, and STFI Compression. Two weights of linerboard are tested each month for Mullen Burst, Ring Crush, and STFI Compression: 42 lb. - every month; 35 lb. and 56 lb. - alternate months. The participants return their test results for analysis and receive a monthly report.

Please refer to the section, "EXPLANATION OF TABLES", for definitions of terms and guidelines to interpreting the results.

USE OF AVERAGE MEAN AS A COLLABORATIVE REFERENCE VALUE

The samples of linerboard and corrugating medium, which have been randomized and placed in sealed packages for distribution in this program, may be used as collaborative reference materials. The values most representative of each material are the Cumulative Grand Means in the latest reports, given at the bottom right of each table. Comparisons can only be made within one lot of material; therefore check your measurements against the Cumulative Grand Means with the same lot code as on the packages being tested.

Material	Lot Code	Dates in Use
26 lb Corrugating Medium	CM11	January 2020-Current
35 lb Linerboard	35E2	June 2020-Current
	35E1	February 2020-April 2020
42 lb Linerboard	42F2	February 2020-Current
	42F1	January 2020-January 2020
56 lb Linerboard	56G1	January 2020-Current
	56G2	May 2021-May 2021

ABOUT CTS

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries, including rubber, plastics, fasteners and metals, containerboard, paper, color, and wine, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality control objectives. Labs from the U.S., as well as more than 80 countries, currently participate in the CTS programs.

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EXPLANATION OF TABLES

Each analysis is divided into three time spans. On the left side of the table are the individual laboratory results for each week of the month; in the center are each lab's statistical data for the month; and on the right are each lab's cumulative data for up to 16 weeks. At the bottom of the table are the consensus statistics for all the participants for each of the three time spans.

Definitions of Terms Used

Weekly Results

Laboratory Data

- WebCode - A six character laboratory identifier used to maintain information on a confidential basis. The WebCode is unique for each cycle and will change for each report. Your WebCode can be found in your Individual Report (Current Month Performance Report) and your datasheet.
- Weekly Means - The average of the test results obtained by the participant for each week that data were reported.

Consensus Data

- Wk Mean - For each week, the average of the Means for all the participants, excluding those laboratories flagged with an 'X'.
- Avg SD - For each week, the average of the within-laboratory standard deviations (SD's) for all the participants, excluding those laboratories flagged with an 'X'. The Avg SD is an indication of the variation of measurements within an average laboratory.
- SD btwn Labs - For each week, the standard deviation of the laboratory Means about the Wk Mean, excluding those laboratories flagged with an 'X'. The SD LABS is an indication of the precision of measurement between the laboratories.
- Labs Incl - The number of laboratory Means included in the Wk Mean for that week.
- Labs Excl - The number of laboratory Means reported but excluded from the Wk Mean for that week because of outlying results ('X' following Mean).
- Labs not rcvd - The number of laboratories failing to report for that week.

Monthly Results

Laboratory Data

- Mean - For each laboratory, the average of all the weekly Means reported for this month.
- CPV - **Comparative Performance Value**, an indication of how well a laboratory's Mean agrees with the other participants. The CPV is a ratio indicating the number of standard deviations from the consensus mean (Monthly Mean). The closer a laboratory's CPV is to zero, the more consistent its results are with the other participants' data.
- SD - For each laboratory, the average of the weekly within-lab standard deviations (SD's) for all reported Weekly Means this month.
- SD Wk - The standard deviation among the laboratory's weekly Means, including those Means flagged with an 'X'. The SD Wks is an indication of that laboratory's ability to obtain constant results from week to week.

Consensus Data

- Month Mean - The average of the Means for all the participants, excluding those laboratories flagged with an 'X,' reporting data for this month.
- Avg SD - For the current month, the average of the within-laboratory standard deviations (SD's) for all the participants, excluding those laboratories flagged with an 'X'.
- SD btwn Labs - For the current month, the standard deviation of the laboratory Means about the Month Mean, excluding those laboratories flagged with an 'X'.
- SD btwn Group - For the current month, the standard deviation of the laboratory Means within the group about the Month Mean, excluding those laboratories flagged with an 'X'.
- SD btwn Wks - For the current month, the average of the laboratory between week standard deviations (SD Wks') for all the participants, excluding those laboratories flagged with an 'X'.

Cumulative Results

Laboratory Data

Mean	-	For each lab, the average of all the monthly Means reported for the weeks shown.
CPV	-	Comparative Performance Value , an indication of how well a laboratory's cumulative mean agrees with the other participants. The CPV is a ratio indicating the number of standard deviations from the consensus mean (Monthly Mean).
SDr	-	For each laboratory, the average of the weekly within-lab standard deviations (SD's) for the weeks shown.
SD Wk	-	The standard deviation among the laboratory's weekly Means for the weeks shown, including those Means flagged with an 'X'. The SD Wks is an indication of that laboratory's ability to obtain constant results from week to week.
Wks	-	The number of weeks included in the cumulative period.
Inst	-	The two letter instrument code. Codes are summarized at the bottom of the last analysis page.

Consensus Data

Grand Mean	-	The average of the Means for all the participants, excluding those laboratories flagged with an 'X,' reporting data for the number of weeks included in the cumulative period.
Avg SD	-	For the cumulative period, the average of the within-laboratory standard deviations (SD's) for all the participants, excluding those laboratories flagged with an 'X'.
SD btwn Labs	-	For the cumulative period, the standard deviation of the laboratory Means about the Month Mean, excluding those laboratories flagged with an 'X'.
SD btwn Wks	-	For the cumulative period, the average of the laboratory between week standard deviations for all the participants, excluding those laboratories flagged with an 'X'.
Labs Incd	-	The number of laboratory Means included in the Grand Mean.

Any laboratory that receives a 'flag' following a mean or standard deviation should refer to the chart below for an explanation of the data flag symbol:

<u>Flag</u>	<u>Explanation</u>
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Data Flags "X" and "*" indicate a laboratory's performance on an average value differed from the consensus.

Data Flags "H" and "L" indicate a laboratory's performance on a standard deviation differed from the consensus.

Flags assigned to Weekly Means, Monthly Mean and Cumulative Mean:

- | | |
|---|--|
| X | Excluded from the weekly means, monthly means and/or the cumulative mean. Immediate review of data and/or testing procedure is recommended. |
| * | Included in the weekly means, monthly means and/or the cumulative mean; however, lab should review testing procedure and monitor future results. |

Flags assigned to Weekly Means:

- | | |
|---|--|
| H | Indicates high within-laboratory standard deviation. The laboratory SD for each week is not shown, but laboratory average SD and consensus average SD values are shown. |
| L | Indicates low within-laboratory standard deviation. The laboratory SD for each week is not shown, but laboratory monthly average SD and consensus average SD values are shown. |

Flags assigned to Monthly SD Wks and Cumulative SD Wks:

- | | |
|---|--|
| H | Indicates high variability between weekly means (high week-to-week variation). |
| L | Indicates low variability between weekly means (low week-to-week variation). |



Containerboard Interlaboratory Testing Program
Analysis 201

Report #620 (E)
May 2021

Top to Bottom Box Compression Strength, Corrugated Boxes - BX15

TAPPI Official Test Method T804

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
4HNKFW	826.9	0.14	22.98	836.6	0.43	31.35	3	LL
4RW332	866.2	0.72	28.05	834.2	0.38	25.43	4	EX
648V62	801.3	-0.24	12.62	800.4	-0.22	28.37	4	LM
7GAQYM	818.4	0.02	48.62	822.8	0.18	4.39	4	ER
7K92VM	715.7	-1.50	64.00	794.3	-0.33	55.05	4	ER
A943MY	872.6	0.82	81.74	888.4	1.35	15.20	4	ET
C8GNXD	869.0	0.76	78.48	821.7	0.16	33.60	4	ES
EGL8FY	867.0	0.73	51.54	830.2	0.31	33.07	4	LG
G237UT	908.2	1.34	38.80	894.1	1.45	26.49	4	EX
GR6M3X	751.2	-0.97	19.06	771.7	-0.73	16.34	4	LG
H8FQ4H	861.0	0.64	39.39	862.5	0.89	48.85	4	LS
HV8RMX	742.3	-1.10	48.24	818.8	0.11	54.99	4	LM
HY8WAQ	829.8	0.18	87.78	831.3	0.33	19.59	4	EX
J6BCJX	841.8	0.36	29.05	865.4	0.94	21.56	3	LH
J992CQ	797.5	-0.29	72.01	812.8	0.00	27.86	4	LS
JWEMDU	816.3	-0.01	63.93	816.3	0.06	0.00	1	LS
LWUERW	878.8	0.91	8.04	873.7	1.09	8.76	4	LG
LZTQMW	773.9	-0.64	88.30	779.6	-0.59	26.04	3	EX
P4V8YF	901.4	1.24	18.86	869.7	1.02	25.64	4	LG
Q3Y29E	879.3	0.91	31.65	840.5	0.50	63.90	4	ER
QAJXDN	834.5	0.25	51.34	871.1	1.04	27.16	4	LO
UG3NWK	891.4	1.09	58.17	838.7	0.46	50.39	4	LG
UW69MN	666.3	-2.23 *	72.20	678.1	-2.41 *	58.73	4	TB
VAM6F7	762.8	-0.80	22.94	710.3	-1.83	48.59	4	LS
VQ8VCK	867.2	0.74	34.75	715.3	-1.74	138.85	4	H
WMNCT2	699.0	-1.74	78.88	731.7	-1.45	28.09	4	LL
WW8WR6	721.4	-1.41	8.23	737.0	-1.35	13.34	4	LL
WY38C8	898.8	1.20	48.44	848.1	0.63	33.87	4	ER
YYU2RF	741.0	-1.12	70.54	774.0	-0.69	40.63	4	LG

Consensus (All Labs) Results

Month Mean	817.28	Grand Mean	812.73
Avg SD	53.43	Avg SD Months	43.74
SD btwn Labs	67.84	SD btwn Labs	55.98
Labs Incl	29	Labs Incl	29



Containerboard Interlaboratory Testing Program
Analysis 201

Report #620 (E)
May 2021

Top to Bottom Box Compression Strength, Corrugated Boxes - BX15

TAPPI Official Test Method T804

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	798.20	87.49	19.08	9
Water based adhesive sealing	867.20	0.00	49.92	1
Clip sealing	823.68	58.25	6.41	19

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	ER	Emerson 6200 Series
ES	Emerson 8510	ET	Emerson 7200
EX	Emerson Apparatus (Model not specified)	LG	TLS / L.A.B. Validator Series
LH	L.A.B. Compression Tester Model #10610	LL	Lansmont 76-5K
LM	Lansmont 122-15k	LO	Lansmont 152-30k
LS	Lansmont Squeezer	TB	TMI Monitor/Compression Tester, Model 17-70



Containerboard Interlaboratory Testing Program
 Analysis 202
Edgewise Compressive Strength, by T811, Corrugated Board - EC13
 TAPPI Official Test Method T811

Report #620 (E)
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WebCode	Monthly Results				Cumulative Results				Inst
	Mean	CPV	SD		Mean	CPV	SD Months	Months	
743X8B	46.0	0.93	1.20		44.4	0.40	1.99	3	LC
7K92VM	44.9	0.61	3.16	H	45.4	0.67	1.72	4	EN
DHJ2WR	44.3	0.43	0.78	L	47.0	1.11	2.18	4	XX
EGL8FY	41.7	-0.34	2.90		42.2	-0.20	1.09	4	LE
G237UT	42.4	-0.13	1.74		42.6	-0.10	1.55	4	LC
HY8WAQ	44.3	0.43	2.46		44.7	0.49	0.60	4	LC
J992CQ	41.7	-0.36	2.36		41.0	-0.55	0.95	4	LD
KEDZLV	44.9	0.61	1.95		43.7	0.20	1.71	2	XX
LWUERW	45.1	0.66	1.63		45.6	0.74	0.48	4	EM
R98HJN	40.9	-0.58	2.43		42.3	-0.19	1.79	4	LD
VAM6F7	34.9	-2.39 *	1.87		34.6	-2.31 *	1.81	4	EM
VZB99E	47.3	1.33	0.76	L	47.3	1.20	0.00	1	XX
X7C8W9	38.8	-1.22	0.63	L	37.7	-1.46	0.94	4	TF

Consensus (All Labs) Results			
Month Mean	42.86	Grand Mean	42.95
Avg SD	2.00	Avg SD Months	1.50
SD btwn Labs	3.33	SD btwn Labs	3.60
Labs Incd	13	Labs Incd	13

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LE	L&W Crush Tester 840	TF	TMI Digital Crush Tester, Model 17-19
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program
 Analysis 203
Edgewise Compressive Strength by T839, Corrugated Board - EC13
 TAPPI Official Test Method T839

Report #620 (E)
May 2021

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
4H9CF9	45.5	0.22	1.28	47.2	0.94	1.46	4	TG
4HNKFW	45.1	0.08	1.18	46.6	0.60	1.31	3	BU
4RW332	48.4	1.22	1.44	46.2	0.35	3.00	4	LD
648V62	44.7	-0.08	1.90	46.2	0.36	1.39	4	TG
743X8B	46.9	0.69	1.47	47.6	1.17	1.34	4	LC
7GAQYM	47.7	0.98	1.29	46.4	0.51	1.34	4	LD
7K92VM	43.9	-0.36	3.85	44.6	-0.59	1.52	4	EN
A943MY	46.1	0.43	2.29	45.4	-0.09	0.59	4	TD
C8GNXD	47.4	0.89	3.48	47.2	0.97	0.78	4	LD
DHJ2WR	45.1	0.07	0.91	47.5	1.11	1.99	4	XX
EGL8FY	45.9	0.35	1.29	45.6	0.00	0.62	4	LY
FAXPVW	39.7	-1.84	1.02	42.5	-1.82	2.37	4	TK
G237UT	48.1	1.14	1.18	48.0	1.46	0.72	4	LC
H8FQ4H	49.0	1.45	3.06	51.2	3.30	1.56	4	TB
HQZ7UU	42.4	-0.90	1.30	43.9	-1.00	3.82	4	TD
HV8RMX	46.7	0.61	1.57	46.4	0.47	1.97	4	EM
HY8WAQ	45.5	0.22	1.25	45.2	-0.21	0.86	4	LC
J6BCJX	42.6	-0.82	1.69	47.5	1.14	4.27	3	EM
J992CQ	44.5	-0.13	1.66	44.0	-0.95	1.16	4	LD
KEDZLV	44.8	-0.06	1.29	45.7	0.07	1.33	2	XX
LZTQMW	44.7	-0.09	1.16	45.5	-0.04	0.98	4	TL
NCWT2P	40.4	-1.59	2.36	39.0	-3.92	1.12	4	XX
P4V8YF	41.3	-1.30	1.57	45.1	-0.30	3.21	4	TJ
PYZFQJ	44.9	-0.02	0.83	43.8	-1.05	1.48	2	LD
Q3Y29E	47.0	0.73	1.45	44.9	-0.40	3.07	4	LD
QAJXDN	43.1	-0.63	0.91	43.9	-0.98	0.98	4	LD
QPEBJJ	42.5	-0.86	1.19	46.2	0.38	2.67	4	TD
R98HJN	43.4	-0.53	1.04	45.9	0.17	1.63	4	LD
TQ66JK	50.2	1.86	1.58	45.9	0.21	6.69	4	XX
UW69MN	47.4	0.86	1.03	47.6	1.21	0.37	4	LD
VAM6F7	42.5	-0.86	1.57	43.5	-1.21	0.95	4	EM
VQ8VCK	37.7	-2.57	1.89	44.2	-0.81	4.38	4	TH
WMNCT2	44.4	-0.19	0.87	43.9	-1.01	0.96	4	LC
WY38C8	45.4	0.16	0.85	44.4	-0.68	0.78	4	EM
X7C8W9	42.2	-0.96	0.79	41.7	-2.32	1.04	4	TD
Y7CFQE	50.1	1.83	1.18	49.5	2.33	0.94	4	LD



Containerboard Interlaboratory Testing Program
Analysis 203
Edgewise Compressive Strength by T839, Corrugated Board - EC13
TAPPI Official Test Method T839

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May 2021

Consensus (All Labs) Results			
Month Mean	44.92	Grand Mean	45.58
Avg SD	1.67	Avg SD Months	2.27
SD btwn Labs	2.82	SD btwn Labs	1.69
Labs Incl	36	Labs Incl	34

Key to Instrument Codes Reported by Participants

BU	Buchel Digital Crush Tester	EM	Emerson 1200 Series
EN	Emerson 2200	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LY	L&W 830
TB	TMI Monitor/Compression Tester, Model 17-70	TD	TMI Digital Crush Tester, Model 17-09
TG	TMI Digital Crush Tester, 17-76	TH	TMI Monitor/Compression Tester, Model 17-76
TJ	TLS Compression Tester, Model CDM-5	TK	TLS Compression Tester, Model 5184
TL	Tech-Lab Systems Compression	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42F3
 TAPPI Official Test Method T807

Report #620 (E)
May 2021

WebCode	Weekly Means				Monthly Results					Cumulative Results				
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2EG4EW	98.0 *	99.7 *	98.7 *	98.0 *	98.6	-3.20 X	6.8	0.8	97.9	-4.30 X	7.7	2.3	12	LA
2TFA9R	108.0	105.2	110.2	117.2	110.1	-0.28	8.0	5.1	111.3	0.17	7.6	3.0	16	LA
2TFA9R_AL	113.9	111.9	111.3	107.4	111.1	-0.03	5.9	2.7	111.1	0.09	6.7	1.9	16	AL
3LED32	109.2	117.1	111.2	107.7	111.3	0.01	8.4	4.1	109.6	-0.42	8.4	3.5	16	LA
4RW332	115.2	116.8	111.6	114.4	114.5	0.82	8.9	2.2	111.0	0.04	9.1	3.7	16	AH
7BK9JQ	108.6	107.6 H	111.4	103.0	107.7	-0.92	9.0	3.5	109.3	-0.51	8.2	4.0	16	AH
7BK9JQ_AL	111.8	121.6	115.5 H	113.2	115.5	1.08	9.7	4.3	114.9	1.35	9.6	2.9	16	AL
7GAQYM	100.8 *	100.6 *	104.4	99.7 *H	101.4	-2.50 *	11.2	2.1	103.6	-2.41 *	9.0	3.2	16	AH
7MEP9R	109.7	103.9	102.1	105.7	105.3	-1.50	8.6	3.2	103.9	-2.30 *	8.8	2.5	12	XX
7N9B44_AL	112.6	108.6	107.6	106.9	108.9	-0.59	8.6	2.6	107.3	-1.17	8.6	3.6	16	AL
8A2V8Y_AL	120.2	123.3 *	119.8	116.6 H	120.0	2.20 *	9.6	2.7	111.5	0.21	9.3	6.3	16	AK
8BDJUJ_AL	118.7	119.4	122.4 *H	123.5 *	121.0	2.46 *	9.2	2.3	111.7	0.29	9.2	6.0	16	AL
8R2LN2	111.9	112.3	112.8	112.9	112.5	0.31	4.7	0.5 L	112.8	0.65	4.8	0.5 L	16	LA
974MMN_AL	110.1	111.3	108.7	110.5	110.1	-0.29	8.3	1.1	110.1	-0.23	7.2	2.5	16	AL
9WEW63	105.3	108.7	105.2 L	107.1 L	106.6	-1.19	3.8	1.7	107.4	-1.16	4.2	1.8	16	XX
B3EVTX_AL	107.9	118.9	107.6	112.0	111.6	0.09	8.2	5.3	110.4	-0.14	8.3	3.7	16	AL
BGC7YG_AL	109.5	112.4	112.2	112.8	111.7	0.11	7.2	1.5	113.5	0.90	8.1	7.2 H	16	AL
C826DF	118.4	113.6	119.2	116.8	117.0	1.46	10.8	2.5	114.5	1.23	10.0	3.5	16	LA
C8GNXD	105.0	109.4	106.1	112.7	108.3	-0.75	8.3	3.5	108.5	-0.78	8.9	2.6	16	LA
CTJCRU	119.3	121.5	114.4	112.7	117.0	1.44	7.6	4.1	113.5	0.90	8.7	3.7	16	LA
CUDARN	117.0	121.3	130.2 X	123.1 *	122.9	2.95 X	10.0	5.5	120.8	3.31 X	8.9	4.2	16	AX
DFTYQ4	105.1	110.6	113.5	116.8	111.5	0.06	10.5	5.0	109.3	-0.53	9.7	4.3	8	LC
DFTYQ4_AL	113.9	114.6	112.3	112.2	113.3	0.51	10.2	1.2	110.5	-0.13	12.6	3.7	8	AL
DHJ2WR	117.2	119.4	118.3	117.8 L	118.2	1.75	4.3	0.9	116.5	1.88	3.7	1.7	16	LC
DJA6ME_AL	112.4 H	113.4	116.2	113.7	113.9	0.67	11.6	1.6	112.3	0.49	10.1	2.4	16	AK
DVMGRV	113.1	115.9	No DATA	No DATA	114.5	0.82	8.4	2.0	113.1	0.76	8.6	2.2	8	LC
ECNTMH_AL	108.6	108.7	105.8	108.9	108.0	-0.83	6.3	1.5	110.5	-0.13	7.7	1.9	16	AL
EGL8FY	113.9	113.9	114.4	116.1	114.6	0.84	7.6	1.0	114.3	1.15	6.8	2.6	16	AH
EHBGLU_AL	113.0	111.6	109.6	108.8	110.8	-0.13	8.0	1.9	110.9	0.01	8.2	2.7	16	AL
G237UT	113.1	111.7	109.0	107.5	110.3	-0.24	9.3	2.5	110.4	-0.14	9.5	2.5	16	AH
GAUKXY_AL	112.4	111.5	110.7	112.3	111.7	0.12	9.2	0.8	110.8	-0.03	10.3	2.3	16	AL
GBP6JD_AL	102.2	114.3	114.0	105.8	109.1	-0.55	9.8	6.0 H	112.2	0.44	9.5	4.5	16	AL
GJK74W	120.8	116.0 L	122.2 *	119.3	119.6	2.10 *	8.5	2.7	118.8	2.64 *	9.0	5.9	15	TB
J77UKY	112.1	110.9	108.5	107.9	109.9	-0.36	6.6	2.0	110.4	-0.16	6.7	1.4	16	TP
J992CQ	113.0	107.0	104.1	109.8	108.5	-0.71	8.6	3.8	108.1	-0.92	8.5	2.8	16	LA



Containerboard Interlaboratory Testing Program
 Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42F3
 TAPPI Official Test Method T807

Report #620 (E)
May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
JPZRK7	106.4	108.3	112.5	108.4	108.9	-0.60	7.0	2.6	109.5	-0.45	7.7	1.9	16	LA
JQUBNT	100.7 *	112.3	110.0	109.9	108.2	-0.77	8.6	5.1	109.0	-0.60	6.8	2.4	16	LA
JXUT2K	109.1	107.3	102.9	108.8	107.0	-1.07	9.3	2.8	109.3	-0.53	9.5	3.1	16	LJ
K2RTHT	115.7	116.5 L	118.0	115.1	116.3	1.28	6.3	1.3	115.1	1.41	6.6	2.3	8	LA
KZBKN7	107.6	112.0	108.0	108.7	109.1	-0.55	9.1	2.0	107.6	-1.08	8.7	2.4	16	LC
LGG4Y4	112.0	114.6	109.8	113.6	112.5	0.31	4.9	2.1	113.7	0.94	5.5	2.7	16	AH
LLREUH	114.3	108.0	108.6	107.0	109.5	-0.45	10.0	3.3	110.8	0.00	9.1	2.9	16	LC
M3VBN2_AL	109.1	105.6	110.3	110.1	108.8	-0.63	7.4	2.2	108.4	-0.80	8.8	2.4	16	XX
NNDHYV	118.7 H	109.6	110.0	113.7	113.0	0.44	11.2	4.2	113.0	0.72	11.2	4.2	4	LC
NNDHYV_AI	118.7 H	110.2	110.0	113.7	113.2	0.48	11.2	4.1	113.2	0.77	11.2	4.1	4	AL
P9UEQ6	111.4	109.4	109.6	109.4	110.0	-0.33	5.3	1.0	111.4	0.20	5.6	3.0	16	AX
P9UEQ6_AL	112.5	112.3	107.2	110.1	110.5	-0.19	8.0	2.5	110.1	-0.25	8.4	2.8	16	AL
Q3Y29E	111.0	109.9	108.7	113.0	110.6	-0.16	10.6	1.8	109.5	-0.43	10.1	3.3	16	LZ
QR3X3Y	111.5	103.9 L	111.8	108.3	108.9	-0.61	7.6	3.7	107.9	-0.99	8.7	2.3	12	LC
R98HJN	115.1	108.7	108.6	105.8	109.5	-0.44	6.4	4.0	109.2	-0.54	5.9	3.0	16	LA
TMGV9Y	110.3	107.7	106.0	107.7	107.9	-0.85	9.4	1.8	110.6	-0.08	9.5	3.8	14	LZ
UK4UDB	106.6	112.6	103.1	104.2	106.6	-1.18	9.0	4.2	104.8	-1.99 *	8.3	3.1	16	LA
UR7RAU	119.8	120.2 L	117.9	119.3	119.3	2.03 *	8.9	1.0	115.4	1.54	8.6	3.6	12	TB
V2B3GK	109.4	110.7	108.7	110.5	109.8	-0.36	6.6	0.9	110.5	-0.10	7.1	1.2	16	AH
VWY7LH	110.8	109.1	115.0	114.5	112.4	0.27	7.2	2.9	110.8	-0.03	7.6	2.4	16	AC
WKX93F_AL	112.9	116.1	105.1	116.3	112.6	0.34	7.4	5.2	115.8	1.65	6.6	4.6	16	AL
X23WU8	107.8	109.7	110.6	107.5	108.9	-0.59	4.2	1.5	106.9	-1.32	4.2	2.6	16	LA
X7C8W9	105.8	104.4 H	104.8 H	103.4	104.6	-1.69	13.5	1.0	110.7	-0.03	11.6	4.0	16	XX
XFY3XA	106.7	102.7	107.3	107.0	106.0	-1.34	7.6	2.2	106.1	-1.58	9.6	2.2	16	LA
Y7CFQE_AL	109.7	114.5	117.0	112.7	113.5	0.56	6.7	3.1	114.9	1.37	6.1	2.5	16	AK
YGXJXD	111.7	111.7	111.6	111.8	111.7	0.11	4.7	0.1 L	111.3	0.14	5.2	0.7 L	12	LJ

Consensus (All Labs) Results														
Wk Mean	111.27	111.68	110.58	111.02	Month Mean	111.26				Grand Mean	110.83			
Avg SDr	8.44	8.02	8.91	8.29	Avg SD	8.42				Avg SD	8.41			
SD btwn Labs	4.96	5.19	4.96	5.04	SD btwn Labs	3.95				SD btwn Labs	3.00			
Labs Incl	61	61	59	60	SD btwn Wks	2.96				SD btwn Wks	3.31			
Labs Excl	0	0	1	0	Labs Incl	59				Labs Incl	59			
Labs not Rcvd	0	0	1	1										



Containerboard Interlaboratory Testing Program
Analysis 205
Bursting Strength (Mullen), 42 lb Linerboard - 42F3
TAPPI Official Test Method T807

Report #620 (E)
May 2021

Key to Instrument Codes Reported by Participants

AC	Perkins Model C	AH	Perkins Model AH
AK	L & W Autoline 300	AL	L & W Autoline 400
AX	Perkins Mullen Tester (model not specified)	LA	L&W Bursting Strength Tester
LC	L&W Autoline (205 Enrollment)	LJ	L&W Bursting Strength Tester J-Type
LZ	L&W (model not specified)	TB	TMI Monitor/Burst 1000
TP	Technidyne PROFILE/Plus	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 206
Bursting Strength (Mullen), 56 lb Linerboard - 56G2
 TAPPI Official Test Method T807

Report #620 (E)
May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
2EG4EW	112.3	105.8 *	102.5 X	111.5	108.0	-1.96 *	10.3	4.7	108.0	-1.96 *	10.3	4.7	4	XX
2TFA9R	118.1	118.1	123.9	120.5	120.1	1.01	9.3	2.7	120.1	1.01	9.3	2.7	4	LA
2TFA9R_AL	116.9	113.3 L	122.0	121.3	118.4	0.57	6.8	4.1	118.4	0.57	6.8	4.1	4	XX
3LED32	113.2	116.1	114.8	114.5	114.6	-0.34	10.3	1.2	114.6	-0.34	10.3	1.2	4	LA
4RW332	114.8	119.6	114.8	116.4	116.4	0.09	9.1	2.3	116.4	0.09	9.1	2.3	4	AH
7BK9JQ	113.6	109.4	121.6	105.6 *	112.6	-0.85	10.1	6.9 H	112.6	-0.85	10.1	6.9 H	4	AH
7BK9JQ_AL	109.7	113.8 H	117.7	120.0	115.3	-0.18	12.0	4.5	115.3	-0.18	12.0	4.5	4	AL
7GAQYM	111.8	103.4 *	109.1	106.6	107.7	-2.03 *	10.9	3.6	107.7	-2.03 *	10.9	3.6	4	AH
7MEP9R	113.8	113.9	113.5	114.8	114.0	-0.49	8.8	0.6 L	114.0	-0.49	8.8	0.6 L	4	XX
7N9B44_AL	112.8	109.6	115.8	111.8	112.5	-0.86	12.0	2.6	112.5	-0.86	12.0	2.6	4	AL
8A2V8Y_AL	124.9	131.6 X	119.3	121.6	124.3	2.04 *	12.3	5.4	124.3	2.04 *	12.3	5.4	4	AK
8BDJUJ_AL	121.9	119.5	116.5	120.2	119.5	0.85	7.1	2.3	119.5	0.85	7.1	2.3	4	AL
8R2LN2	114.9 L	115.3 L	115.5 L	115.2	115.2	-0.20	4.2	0.3 L	115.2	-0.20	4.2	0.3 L	4	LA
974MMN_AL	117.0	111.3	112.1	114.4	113.7	-0.57	7.9	2.6	113.7	-0.57	7.9	2.6	4	AL
9WEW63	121.8 L	119.3	119.5 L	120.3 L	120.2	1.03	4.2	1.1	120.2	1.03	4.2	1.1	4	XX
B3EVTX_AL	115.9	111.4	118.5	119.2	116.2	0.05	9.8	3.5	116.2	0.05	9.8	3.5	4	AL
BGC7YG_AL	117.9	115.4	119.6	119.6	118.1	0.52	9.1	2.0	118.1	0.52	9.1	2.0	4	AL
C826DF	120.3	119.4	122.9	132.8 X	123.8	1.91	9.2	6.1	123.8	1.91	9.2	6.1	4	LA
C8GNXD	114.9	112.0	120.5	110.3	114.4	-0.39	13.4	4.5	114.4	-0.39	13.4	4.5	4	LA
CTJCRU	119.1	122.3	113.9	108.1	115.8	-0.04	11.6	6.2	115.8	-0.04	11.6	6.2	4	LA
CUDARN	115.1	121.5	133.7 X	122.0	123.1	1.73	9.1	7.7 H	123.1	1.73	9.1	7.7 H	4	XX
DFTYQ4	118.0	120.8	118.8	117.7	118.8	0.68	11.5	1.4	118.8	0.68	11.5	1.4	4	LC
DFTYQ4_AL	121.5	115.2	120.8 H	116.3	118.4	0.59	15.5	3.2	118.4	0.59	15.5	3.2	4	AL
DJA6ME_AL	123.0	119.0	118.6	120.7	120.3	1.05	11.2	2.0	120.3	1.05	11.2	2.0	4	AK
DVMGRV	118.6	119.9	No DATA	No DATA	119.3	0.79	10.2	0.9	119.3	0.79	10.2	0.9	2	XX
ECNTMH_AL	117.7	115.6	112.9	111.7	114.5	-0.38	10.0	2.7	114.5	-0.38	10.0	2.7	4	XX
EGL8FY	126.3 *	124.5	124.0	122.3	124.3	2.02 *	8.3	1.6	124.3	2.02 *	8.3	1.6	4	AH
EHBGLU_AL	116.0	112.6	113.4	112.4	113.6	-0.60	9.4	1.7	113.6	-0.60	9.4	1.7	4	AL
G237UT	110.0	110.9	111.8	109.9	110.7	-1.32	10.7	0.9	110.7	-1.32	10.7	0.9	4	AH
GAUKXY_AI	112.8 H	118.9	115.5	115.1	115.6	-0.11	11.8	2.5	115.6	-0.11	11.8	2.5	4	AL
GBP6JD_AL	120.0	117.2	115.1	111.7	116.0	-0.01	12.1	3.5	116.0	-0.01	12.1	3.5	4	AL
GJK74W	126.3 *	118.5	125.9 *	127.9 *	124.7	2.11 *	10.1	4.2	124.7	2.11 *	10.1	4.2	4	TB
J77UKY	114.6	113.5	111.5	115.5	113.8	-0.55	7.7	1.7	113.8	-0.55	7.7	1.7	4	TP
J992CQ	116.9	116.3	114.4	110.7	114.6	-0.36	10.7	2.8	114.6	-0.36	10.7	2.8	4	LA
JPZRK7	114.6	114.9	114.2	114.9	114.7	-0.34	13.7	0.3 L	114.7	-0.34	13.7	0.3 L	4	LA



Containerboard Interlaboratory Testing Program
 Analysis 206
Bursting Strength (Mullen), 56 lb Linerboard - 56G2
 TAPPI Official Test Method T807

Report #620 (E)
May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
JQUBNT	106.8	110.7	108.3	111.8	109.4	-1.62	7.2	2.3	109.4	-1.62	7.2	2.3	4	LA
JXUT2K	120.8	123.1	112.8	108.6	116.3	0.07	9.2	6.8	116.3	0.07	9.2	6.8	4	LZ
K2RTHT	116.1	121.3 L	120.1	118.0	118.9	0.70	6.9	2.3	118.9	0.70	6.9	2.3	4	LA
KZBKN7	105.2 *	107.6	114.1	113.2	110.0	-1.47	9.3	4.3	110.0	-1.47	9.3	4.3	4	LA
LGG4Y4	127.4 *L	122.6	117.6	117.8	121.4	1.30	5.5	4.6	121.4	1.30	5.5	4.6	4	AH
LLREUH	120.2	116.1	120.4	115.1 H	117.9	0.47	12.6	2.8	117.9	0.47	12.6	2.8	4	LC
M3VBN2_AL	112.7 L	114.4	114.0	114.2	113.8	-0.54	6.5	0.8	113.8	-0.54	6.5	0.8	4	XX
NNDHYV	108.4	120.8	112.9	116.5	114.7	-0.33	9.6	5.3	114.7	-0.33	9.6	5.3	4	LC
NNDHYV_AI	109.0	120.9	112.9	116.8	114.9	-0.27	9.5	5.1	114.9	-0.27	9.5	5.1	4	XX
P9UEQ6	116.0	116.0	113.4	111.8	114.3	-0.42	7.2	2.1	114.3	-0.42	7.2	2.1	4	LC
P9UEQ6_AL	122.5	115.3	120.1	120.4	119.6	0.87	7.2	3.0	119.6	0.87	7.2	3.0	4	AL
Q3Y29E	112.9	113.0	119.9	112.2	114.5	-0.37	10.2	3.6	114.5	-0.37	10.2	3.6	4	LZ
QR3X3Y	111.9	103.3 *	111.3	113.9	110.1	-1.45	10.1	4.6	110.1	-1.45	10.1	4.6	4	LC
R98HJN	112.7	112.9	113.1	119.3	114.5	-0.37	8.0	3.2	114.5	-0.37	8.0	3.2	4	LA
TMGV9Y	118.9	117.5	110.8	109.6	114.2	-0.45	9.0	4.7	114.2	-0.45	9.0	4.7	4	LZ
UK4UDB	109.5	111.8	106.1 *	109.5	109.2	-1.67	7.9	2.3	109.2	-1.67	7.9	2.3	4	LA
UR7RAU	119.8	121.0	120.3	115.8	119.2	0.78	11.3	2.3	119.2	0.78	11.3	2.3	4	TB
V2B3GK	113.1	114.7	112.2	114.0	113.5	-0.62	6.4	1.1	113.5	-0.62	6.4	1.1	4	AH
VWY7LH	116.7	116.8	121.1	118.9	118.4	0.58	8.2	2.1	118.4	0.58	8.2	2.1	4	XX
WKX93F_AL	115.9	120.2	116.3	117.6	117.5	0.36	10.5	1.9	117.5	0.36	10.5	1.9	4	AL
X23WU8	109.2 L	114.7	114.2	114.5 L	113.2	-0.70	4.4	2.6	113.2	-0.70	4.4	2.6	4	LA
X7C8W9	113.8	112.8	113.7	112.2	113.1	-0.71	9.6	0.8	113.1	-0.71	9.6	0.8	4	XX
XFY3XA	113.8	113.4	112.4	113.0	113.1	-0.71	10.0	0.6	113.1	-0.71	10.0	0.6	4	XX
Y7CFQE_AL	121.8	122.3	122.4	126.7 *	123.3	1.78	7.9	2.3	123.3	1.78	7.9	2.3	4	AL
YGXJXD	113.6	113.3	113.1	113.2	113.3	-0.67	5.6	0.2 L	113.3	-0.67	5.6	0.2 L	4	LJ

Consensus (All Labs) Results										
Wk Mean	116.09	115.67	116.17	115.43	Month Mean	116.02		Grand Mean	116.02	
Avg SDr	9.82	9.00	9.86	9.75	Avg SD	9.62		Avg SD	9.62	
SD btwn Labs	4.86	4.74	4.30	4.67	SD btwn Labs	4.08		SD btwn Labs	4.08	
Labs Incl	60	59	57	58	SD btwn Wks	3.43		SD btwn Wks	3.43	
Labs Excl	0	1	2	1	Labs Incl	60		Labs Incl	60	
Labs not Rcvd	0	0	1	1						



Containerboard Interlaboratory Testing Program
Analysis 206
Bursting Strength (Mullen), 56 lb Linerboard - 56G2
TAPPI Official Test Method T807

Report #620 (E)
May 2021

Key to Instrument Codes Reported by Participants

AH	Perkins Model AH	AK	L & W Autoline 300
AL	L & W Autoline 400	LA	L&W Bursting Strength Tester
LC	L&W Autoline (206 Enrollment)	LJ	L&W Bursting Strength Tester J-Type
LZ	L&W (model not specified)	TB	TMI Monitor/Burst 1000
TP	Technidyne PROFILE/Plus	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42F3

TAPPI Official Test Method T822

Report #620 (E)

May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
2TFA9R	90.5	90.3	91.2	90.8	90.7	-0.39	2.6	0.4 L	90.5	-0.47	2.6	1.4	16	LD
3LED32	96.1	94.0	97.9 *	98.3 *	96.6	1.67	4.5	2.0	90.0	-0.71	6.2	11.3 H	16	LD
4H9CF9	92.2	96.3	91.9	92.6	93.3	0.51	3.6	2.1	93.0	0.68	2.9	2.2	16	TH
742R6V	92.5	92.2	95.1	90.3 H	92.5	0.25	3.8	2.0	89.0	-1.16	3.1	6.5 H	16	LZ
743X8B	88.6	87.2	87.9	88.6	88.1	-1.31	2.8	0.7	88.1	-1.55	2.9	1.5	16	LC
7GAQYM	85.8	91.2	91.2	89.3	89.4	-0.86	4.0	2.5	87.7	-1.76	3.1	2.4	16	LD
7H4CVY	90.5	90.2	89.8	89.4	90.0	-0.65	3.3	0.5	91.7	0.09	2.9	2.2	16	LD
7K92VM	88.6	89.0	89.2	89.3	89.0	-0.98	2.6	0.3 L	89.3	-0.99	2.9	1.7	16	EN
7MEP9R	96.4	95.0	95.3	94.8	95.4	1.25	2.8	0.7	98.3	3.13 X	2.9	4.3	12	XX
7N9B44	91.5	93.3	93.7 L	95.0	93.4	0.55	3.1	1.4	92.4	0.42	3.0	1.1	16	LD
8BDJUU	81.8 X	70.1 XH	59.3 XH	82.4 *	73.4	-6.48 X	7.0	11.0 H	82.0	-4.37 X	6.2	13.5 H	16	LC
8R2LN2	93.3	93.8	93.5	94.0	93.7	0.65	2.5	0.3 L	93.5	0.91	2.6	0.3 L	16	LD
974MMN	87.3	89.7	90.7	93.7	90.4	-0.51	4.3	2.7	90.7	-0.35	5.0	2.2	16	LZ
9TEMWL	95.1	97.1	97.0	96.0	96.3	1.58	3.7	1.0	98.9	3.41 X	3.3	2.2	16	EX
9WEW63	83.8 *H	74.1 X	72.8 X	90.5	80.3	-4.05 X	4.5	8.4 H	80.5	-5.04 X	4.3	4.4	16	LD
AM4UJ3	72.7 X	74.2 X	75.2 X	75.4 X	74.3	-6.15 X	3.1	1.2	75.0	-7.55 X	3.5	1.7	16	EM
C826DF	93.7	95.0	93.6	93.2	93.9	0.73	3.6	0.8	95.4	1.79	3.2	1.7	16	LZ
CTJCRU	106.1 X	104.3 X	107.7 X	106.0 X	106.0	5.01 X	3.3	1.4	103.8	5.62 X	3.4	1.9	16	LD
CUDARN	89.4	85.7	87.1	87.7	87.5	-1.53	3.5	1.6	90.1	-0.66	3.9	2.1	16	LD
DFTYQ4	94.4	91.9	91.6	92.9	92.7	0.30	2.9	1.2	91.8	0.12	3.2	1.6	8	LD
DJA6ME	92.3	91.1	89.3	90.1	90.7	-0.39	2.7	1.3	89.2	-1.03	2.8	2.1	16	LD
DVMGRV	94.8	91.2	96.2 H	93.0	93.8	0.71	7.3	2.2	95.1	1.65	4.5	2.5	16	MB
E4CLZM	87.3	86.2	87.3	83.7 *	86.1	-2.00 *	3.4	1.7	87.2	-1.98 *	3.7	1.7	8	TX
ECNTMH	90.4	90.6 L	89.6	90.1	90.2	-0.57	2.2	0.4	90.2	-0.61	2.2	1.3	16	LD
EGL8FY	95.4	92.1	89.8	90.1	91.9	0.01	2.8	2.6	91.6	0.04	2.6	1.5	16	LG
F6LVQY	91.6 L	90.8 L	91.0 L	91.1	91.1	-0.24	1.6	0.3 L	90.5	-0.47	1.4	1.1	16	RS
FAXPVW	92.2 L	92.7 L	93.1 L	92.3 L	92.6	0.26	1.3	0.4 L	91.1	-0.20	1.6	3.0	16	MB
FJQ3VW	84.3 *H	98.8 *	92.0	No DATA	91.7	-0.05	4.6	7.3 H	92.5	0.48	5.0	6.4 H	15	MB
G237UT	93.4	93.6	92.5	91.3	92.7	0.32	2.8	1.1	93.2	0.76	2.9	1.0	16	LC
GAUKXY	97.2	98.3	94.9	95.8	96.6	1.67	3.7	1.5	93.7	1.00	5.0	3.1	12	LC
GBP6JD	85.6	86.5	88.7	86.7	86.9	-1.74	3.2	1.3	89.9	-0.75	3.6	3.4	16	LC
GJK74W	93.3	96.0	102.4 X	96.2 H	97.0	1.82	4.2	3.8	96.2	2.14 *	3.7	2.7	16	LX
J77UKY	93.2	92.9	94.0	91.7	93.0	0.40	4.1	0.9	91.5	0.01	4.2	1.3	16	TJ
J992CQ	89.8	89.9	90.3	89.4	89.9	-0.69	3.2	0.4 L	91.6	0.05	2.7	1.6	16	LD
JQUBNT	94.7	89.8	90.0	90.6	91.3	-0.19	3.2	2.3	90.7	-0.36	3.2	1.6	16	TU



Containerboard Interlaboratory Testing Program
 Analysis 215
Ring Crush, 42 lb Linerboard - 42F3
 TAPPI Official Test Method T822

Report #620 (E)
May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
K2RTH	92.3	91.0	90.4	88.1	90.5	-0.48	2.3	1.8	90.9	-0.26	2.5	2.2	16	LC
KZBKN7	92.3	93.8	94.1 L	92.5	93.2	0.48	2.3	0.9	92.3	0.38	2.4	1.4	16	LD
LLREUH	93.4	92.9	89.8	91.5	91.9	0.03	2.8	1.6	92.7	0.54	2.8	1.7	16	LD
NNDHYV	92.1	92.9	95.9	89.1	92.5	0.23	3.3	2.8	92.5	0.45	3.3	2.8	4	LD
Q3Y29E	92.5	94.1	92.1	93.2	93.0	0.41	2.5	0.9	93.8	1.05	2.7	1.5	16	LD
QG4ZGK	98.8 *	98.2	95.8	102.2 X	98.7	2.44 *	3.6	2.6	95.9	2.00 *	3.5	3.5	16	TH
QLW684	91.5	91.9	92.0	92.3	91.9	0.04	2.4	0.3 L	92.3	0.36	2.9	1.9	16	LD
QR3X3Y	93.9	91.0	95.0	108.3 XH	97.0	1.84	5.8	7.7 H	94.6	1.42	5.4	5.3	12	LD
R98HJN	89.6	89.8	90.1	88.7	89.6	-0.79	3.0	0.6	89.5	-0.93	2.8	0.8	16	LD
TMGV9Y	89.8	89.2	92.2	91.2	90.6	-0.43	2.9	1.4	90.9	-0.30	2.8	1.8	14	LC
UR7RAU	90.6 H	96.4	93.6	88.2 H	92.2	0.14	4.9	3.6	92.0	0.23	4.5	3.3	12	LD
VZB99E	89.2	88.0	87.2	89.0 L	88.4	-1.22	2.7	0.9	88.2	-1.51	2.5	1.0	16	EM
WF6X4B	92.0	89.9	88.8	88.8	89.9	-0.68	2.9	1.5	91.0	-0.23	2.6	3.6	16	LZ
X23WU8	91.8 L	91.6	91.4	91.5	91.6	-0.08	2.5	0.2 L	92.7	0.56	2.5	1.4	16	LZ
XFY3XA	88.8	86.2 L	93.6	84.1 *	88.2	-1.28	3.5	4.1	89.6	-0.86	2.9	3.0	16	LD
XLAZWH	91.1 H	84.5 *H	95.4 H	99.2 *	92.5	0.26	11.0	6.3 H	92.6	0.49	7.9	4.9	16	TU
Y7CFQE	93.5	94.5	92.3	92.8 L	93.3	0.52	2.4	1.0	94.2	1.24	2.8	2.3	16	LD
YGXJXD	91.9	91.9	91.9	92.0	91.9	0.04	2.5	0.0 L	91.9	0.20	2.5	0.1 L	12	LD
YRQBV3	87.3	86.0	87.3	83.7 *	86.1	-2.02 *	3.4	1.7	87.3	-1.90	3.6	1.5	16	TX

Consensus (All Labs) Results														
Wk Mean	91.52	91.72	91.92	90.96	Month Mean	91.81	Grand Mean	91.50						
Avg SDr	3.40	3.91	3.87	3.61	Avg SD	3.71	Avg SD	3.52						
SD btwn Labs	3.17	3.41	2.75	3.50	SD btwn Labs	2.84	SD btwn Labs	2.18						
Labs Incl	51	50	49	49	SD btwn Wks	2.41	SD btwn Wks	3.06						
Labs Excl	3	4	5	4	Labs Incl	50	Labs Incl	48						
Labs not Rcvd	0	0	0	1										



Containerboard Interlaboratory Testing Program
Analysis 215
Ring Crush, 42 lb Linerboard - 42F3
TAPPI Official Test Method T822

Report #620 (E)
May 2021

Key to Instrument Codes Reported by Participants

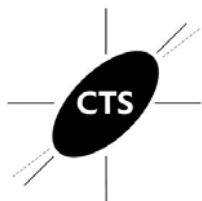
EM	Emerson 1200	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LG	L&W 753
LX	L&W 506	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	RS	Regmed Digital Crush Tester CT-2000
TH	TMI Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)	TX	TMI Digital Crush Tester (model not specified)
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program
 Analysis 216
Ring Crush, 56 lb Linerboard - 56G2
 TAPPI Official Test Method T822

Report #620 (E)
May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2TFA9R	131.6	131.3	133.3	134.5	132.7	-0.77	3.9	1.5	132.7	-0.77	3.9	1.5	4	LD
3LED32	143.9	143.6	148.8 X	143.0	144.8	1.96 *	4.1	2.7	144.8	1.96 *	4.1	2.7	4	LD
4H9CF9	128.2	132.6	134.0	136.3	132.8	-0.74	4.5	3.4	132.8	-0.74	4.5	3.4	4	TH
742R6V	133.4	136.7	140.0	133.9	136.0	-0.02	5.8	3.0	136.0	-0.02	5.8	3.0	4	LZ
743X8B	131.4	132.0	132.3	131.9 L	131.9	-0.94	3.6	0.4 L	131.9	-0.94	3.6	0.4 L	4	LC
7GAQYM	127.0	128.0	128.1 *	129.3	128.1	-1.79	4.0	0.9	128.1	-1.79	4.0	0.9	4	LD
7H4CVY	128.8	136.6	130.3	133.9	132.4	-0.83	4.8	3.5	132.4	-0.83	4.8	3.5	4	LD
7K92VM	135.9	130.6	131.1	128.1	131.4	-1.05	4.6	3.2	131.4	-1.05	4.6	3.2	4	EN
7MEP9R	137.4	133.7	139.8	140.2	137.8	0.38	4.0	3.0	137.8	0.38	4.0	3.0	4	XX
7N9B44	140.6	137.1	137.7	140.1	138.9	0.62	4.3	1.7	138.9	0.62	4.3	1.7	4	LD
8BDJUU	89.1 X	87.5 XH	84.6 XH	89.0 X	87.6	-10.88 X	9.9	2.1	87.6	-10.88 X	9.9	2.1	4	LC
8R2LN2	136.9	137.7	136.8	136.8	137.1	0.21	2.8	0.4 L	137.1	0.21	2.8	0.4 L	4	LD
974MMN	136.4	141.4	140.4	140.2	139.6	0.79	4.9	2.2	139.6	0.79	4.9	2.2	4	LZ
9TEMWL	144.3 L	145.1 *	144.5 *	145.6 *	144.9	1.97 *	4.3	0.6	144.9	1.97 *	4.3	0.6	4	EX
9WEW63	114.4 X	105.8 X	118.9 XH	131.3	117.6	-4.15 X	8.6	10.6 H	117.6	-4.15 X	8.6	10.6 H	4	LD
AM4UJ3	114.2 X	113.4 X	116.1 X	114.8 X	114.6	-4.81 X	4.1	1.1	114.6	-4.81 X	4.1	1.1	4	EM
C826DF	134.7 L	134.0	134.5	132.8	134.0	-0.48	4.1	0.8	134.0	-0.48	4.1	0.8	4	LZ
CTJCRU	151.7 X	151.1 X	155.1 X	152.9 X	152.7	3.72 X	5.2	1.8	152.7	3.72 X	5.2	1.8	4	LD
CUDARN	134.3	135.3	132.2	134.8	134.1	-0.44	6.1	1.4	134.1	-0.44	6.1	1.4	4	LD
DFTYQ4	132.0	135.2	133.8	137.0	134.5	-0.36	5.1	2.1	134.5	-0.36	5.1	2.1	4	LD
DJA6ME	133.9	132.0	131.5	132.2	132.4	-0.83	4.5	1.0	132.4	-0.83	4.5	1.0	4	LD
DVMGRV	142.4	140.4	137.6	134.7	138.8	0.60	4.4	3.3	138.8	0.60	4.4	3.3	4	MB
E4CLZM	129.9	130.7	132.4	125.7 *	129.7	-1.44	3.8	2.8	129.7	-1.44	3.8	2.8	4	TX
ECNTMH	136.8	135.9	137.1	135.1	136.2	0.03	3.3	0.9	136.2	0.03	3.3	0.9	4	LD
EGL8FY	142.2	136.0	135.2	135.9 L	137.3	0.28	2.8	3.3	137.3	0.28	2.8	3.3	4	LY
F6LVQY	136.0 L	136.1 L	138.1 L	137.7 L	137.0	0.20	2.0	1.1	137.0	0.20	2.0	1.1	4	RS
FAXPVW	139.7 L	139.7 L	139.1 L	139.8 L	139.6	0.78	1.5	0.3 L	139.6	0.78	1.5	0.3 L	4	MB
FJQ3VW	131.1 H	144.6	142.1	No DATA	139.3	0.71	7.9	7.2 H	139.3	0.71	7.9	7.2 H	3	MB
G237UT	137.5	139.4	135.7	139.7	138.1	0.44	3.3	1.9	138.1	0.44	3.3	1.9	4	LC
GAUKXY	138.5 H	142.8	146.0 *	142.7	142.5	1.44	6.4	3.1	142.5	1.44	6.4	3.1	4	LC
GBP6JD	129.9	135.4	133.0	135.4	133.4	-0.60	4.0	2.6	133.4	-0.60	4.0	2.6	4	LC
GJK74W	138.6	143.1	151.5 X	146.5 *	144.9	1.98 *	3.4	5.4	144.9	1.98 *	3.4	5.4	4	LY
J77UKY	137.7	134.8	136.6	137.0 H	136.5	0.09	6.2	1.3	136.5	0.09	6.2	1.3	4	TJ
J992CQ	134.1	128.8	134.0	130.9	132.0	-0.93	4.5	2.6	132.0	-0.93	4.5	2.6	4	LD
JQUBNT	141.0	133.0	135.7 H	130.0	134.9	-0.26	6.4	4.7	134.9	-0.26	6.4	4.7	4	TU



Containerboard Interlaboratory Testing Program
 Analysis 216
Ring Crush, 56 lb Linerboard - 56G2
 TAPPI Official Test Method T822

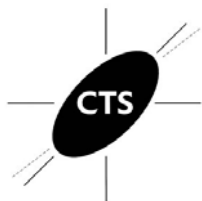
Report #620 (E)
May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
K2RTH	128.0	135.8	134.2	135.5	133.4	-0.61	3.7	3.6	133.4	-0.61	3.7	3.6	4	LC
KZBKN7	135.0	134.3	133.8	136.5	134.9	-0.26	3.7	1.2	134.9	-0.26	3.7	1.2	4	LD
LLREUH	133.5	131.7	138.1	137.6	135.2	-0.20	4.7	3.1	135.2	-0.20	4.7	3.1	4	LD
NNDHYV	130.6 L	131.7	136.3 L	133.6	133.1	-0.68	3.6	2.5	133.1	-0.68	3.6	2.5	4	LD
Q3Y29E	137.6	137.9	133.6	135.1	136.0	-0.01	4.0	2.1	136.0	-0.01	4.0	2.1	4	LD
QG4ZGK	144.8 *	146.5 *	149.7 X	144.4	146.3	2.30 *	4.7	2.4	146.3	2.30 *	4.7	2.4	4	TH
QLW684	134.6	136.1	135.4	133.2	134.8	-0.28	4.4	1.2	134.8	-0.28	4.4	1.2	4	LD
QR3X3Y	150.3 X	141.2	139.4	140.4	142.8	1.51	5.3	5.0	142.8	1.51	5.3	5.0	4	LD
R98HJN	133.1	135.2	132.1	132.6	133.3	-0.64	3.6	1.4	133.3	-0.64	3.6	1.4	4	LD
TMGV9Y	129.9	131.5	132.0	129.5	130.7	-1.21	3.6	1.2	130.7	-1.21	3.6	1.2	4	LC
UR7RAU	140.7	150.0 X	145.5 *H	138.0	143.6	1.67	5.6	5.3	143.6	1.67	5.6	5.3	4	LD
VZB99E	129.8	129.7	133.8	131.7 L	131.3	-1.09	3.2	1.9	131.3	-1.09	3.2	1.9	4	EM
WF6X4B	139.2	135.9	135.2	137.9	137.0	0.21	5.5	1.9	137.0	0.21	5.5	1.9	4	LZ
X23WU8	136.0 L	136.7	136.5	133.8	135.7	-0.08	2.3	1.3	135.7	-0.08	2.3	1.3	4	LZ
XFY3XA	130.0	125.3 *	135.6	132.3	130.8	-1.19	4.0	4.3	130.8	-1.19	4.0	4.3	4	LD
XLAZWH	141.4 H	138.5 H	142.9 H	143.8 H	141.7	1.25	16.6	2.3	141.7	1.25	16.6	2.3	4	TU
Y7CFQE	134.6	133.8	132.0 L	133.0	133.3	-0.62	2.8	1.1	133.3	-0.62	2.8	1.1	4	LD
YGXJXD	138.8	138.5	138.2	138.3	138.5	0.53	3.5	0.3 L	138.5	0.53	3.5	0.3 L	4	LD
YRQBV3	129.9	130.7	132.4	122.7 *	128.9	-1.61	4.1	4.3	128.9	-1.61	4.1	4.3	4	TX

Consensus (All Labs) Results														
Wk Mean	135.37	135.81	135.95	135.66	Month Mean	136.09			Grand Mean	136.09				
Avg SDr	5.09	5.03	4.77	4.86	Avg SD	4.94			Avg SD	4.94				
SD btwn Labs	4.69	4.67	3.99	4.93	SD btwn Labs	4.46			SD btwn Labs	4.46				
Labs Incl	49	49	47	50	SD btwn Wks	2.81			SD btwn Wks	2.81				
Labs Excl	5	5	7	3	Labs Incl	50			Labs Incl	50				
Labs not Rcvd	0	0	0	1										

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LY	L&W Crush Tester 958
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
RS	Regmed Digital Crush Tester CT-2000	TH	TMI Compression Tester, Model 17-76
TJ	TLS Compression Tester, Model CDM-5	TU	TMI Universal Crush Tester (TMI K440)
TX	TMI Digital Crush Tester (model not specified)	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program

Analysis 223

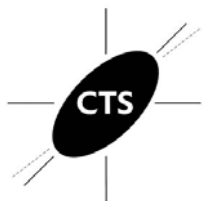
STFI, 42 lb Linerboard - 42F3

TAPPI Official Test Method T826

Report #620 (E)

May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
2EG4EW	43.9 XL	44.1 XL	44.6 XL	44.3 XL	44.2	19.25 X	0.0	0.3	44.8	19.96 X	44.6	0.9	8	LH
2TFA9R_AL	23.6	22.7	24.0	22.1	23.1	-0.48	1.6	0.9	23.2	-0.53	1.6	0.6	16	AL
4RW332	22.8	23.0	23.7	23.7	23.3	-0.30	1.6	0.4	23.3	-0.43	1.6	0.5	16	XX
6GU6PL	23.8	23.1	23.6	22.6	23.3	-0.30	2.0	0.5	22.8	-0.90	1.7	0.6	16	LW
742R6V	25.7	26.2 *L	25.9	26.2	26.0	2.23 *	1.4	0.2	24.3	0.49	1.2	1.9	16	LZ
7BK9JQ	23.5	22.6	24.7	24.3	23.8	0.17	1.8	1.0	23.2	-0.48	1.7	1.1	16	LH
7BK9JQ_AL	22.1	25.3	23.9	23.6	23.7	0.10	1.3	1.3	24.5	0.75	1.6	1.7	16	AL
7GAQYM	22.2	22.8	22.1	22.4	22.4	-1.16	1.6	0.3	22.6	-1.07	1.6	0.6	16	LU
7H4CVY	26.1 *	25.6	26.1 H	25.6	25.9	2.10 *	2.0	0.3	25.4	1.60	1.9	0.8	16	LH
7K92VM	22.9	21.7	22.0	21.7	22.1	-1.44	1.7	0.5	22.3	-1.36	1.7	0.7	16	LY
7N9B44_AL	22.3	25.5	24.6	24.2	24.2	0.51	1.6	1.3	24.5	0.68	1.8	0.9	16	AL
8A2V8Y_AL	25.4	23.1	24.8	25.1	24.6	0.92	1.6	1.0	24.6	0.81	1.6	1.1	16	AK
8BDJUI_AL	23.5	24.2	20.2 *L	23.8	22.9	-0.64	1.6	1.9 H	23.1	-0.62	1.4	1.0	16	AL
8R2LN2	23.8	23.9	23.8	23.9	23.8	0.21	1.9	0.1 L	23.7	-0.02	1.9	0.1 L	16	LA
974MMN_AL	22.8	23.0	24.7	22.9 H	23.3	-0.26	1.9	0.9	23.3	-0.45	1.8	1.1	16	AL
9TEMWL	30.1 XL	31.5 XL	31.5 XL	32.6 XL	31.4	7.31 X	0.0	1.0	31.8	7.63 X	0.0	3.0 H	16	TT
BGC7YG_AL	23.2	23.3	23.3	22.6	23.1	-0.48	1.6	0.4	22.3	-1.33	1.5	0.8	16	AL
BMD8C4	26.2 *	26.2 *	26.0	26.1	26.1	2.33 *	1.5	0.1 L	25.8	1.99 *	1.6	0.5	16	LH
C826DF	22.5 H	22.0 H	21.4	21.7	21.9	-1.57	2.2	0.5	22.5	-1.19	1.9	0.6	16	LW
CBXZN3	23.7	23.3	23.5	23.7	23.5	-0.06	1.5	0.2	23.3	-0.39	1.7	1.0	16	LU
CUDARN	23.7	23.2	23.7 L	24.2	23.7	0.11	1.8	0.4	24.0	0.23	1.7	0.6	16	LH
DFTYQ4	23.2	23.1	23.2	22.1	22.9	-0.68	1.6	0.5	23.1	-0.64	1.6	0.5	8	LA
DFTYQ4_AL	23.6	23.2	22.6	24.0	23.3	-0.24	1.7	0.6	23.4	-0.29	1.8	0.5	8	AL
DHJ2WR	26.1 *	24.0 H	23.6	24.0 L	24.4	0.77	1.8	1.1	25.1	1.31	1.6	1.1	16	LA
DJA6ME_AL	23.6	23.1	23.6	23.0	23.3	-0.26	1.5	0.3	23.0	-0.67	1.6	0.5	16	AK
DVMGRV	23.8	25.5	24.8	24.4	24.6	0.94	1.9	0.7	24.5	0.76	1.9	0.6	16	LA
ECNTMH_AL	24.7	22.5 L	23.7	23.6	23.6	0.02	1.5	0.9	23.3	-0.43	1.5	0.7	16	AL
EGL8FY	22.6	22.7	22.5	22.6	22.6	-0.96	1.6	0.1 L	22.7	-0.98	1.8	0.4	16	LU
EHBGLU	22.5	24.5	24.8	25.3	24.3	0.61	1.9	1.2	24.0	0.23	2.0	1.0	16	LU
FJQ3VW	23.5	24.1	27.0 * No DATA		24.8	1.15	1.6	1.9 H	23.8	0.06	1.8	1.1	15	LA
G237UT	23.5	22.6	23.3	22.7	23.0	-0.55	1.4	0.4	23.1	-0.62	1.6	0.5	16	LU
GAUKXY_AI	25.1	25.4	24.3	24.6	24.9	1.16	1.8	0.5	26.0	2.09 *	1.5	1.5	16	AL
GBP6JD	23.0	25.5	23.3	22.8	23.7	0.04	1.6	1.3	25.3	1.49	1.8	4.5 H	16	LU
J77UKY	23.1	23.1	22.8	22.7	22.9	-0.64	1.4	0.2	23.4	-0.33	1.4	0.4	16	TT
J992CQ	22.7	22.4	22.6	22.7	22.6	-0.96	1.6	0.1 L	22.9	-0.79	1.8	0.5	16	LZ



Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42F3

TAPPI Official Test Method T826

Report #620 (E)

May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
JPZRK7	23.4 H	24.4	24.0	23.2	23.7	0.11	2.0	0.6	23.8	0.04	1.8	0.6	16	LY
JXUT2K	27.2 XH	27.3 XH	26.3 *	26.9 *H	26.9	3.11 X	2.4	0.4	26.5	2.57 *	2.1	0.9	16	LH
K2RTHT	25.0	24.8 L	23.8 L	24.1	24.4	0.77	1.0	0.6	24.5	0.71	1.4	0.6	16	LA
KZBKN7	22.6	22.4	22.2 L	22.2	22.3	-1.19	1.4	0.2	22.5	-1.15	1.5	0.4	16	LA
LGG4Y4	26.1 *	25.9	25.5	27.3 *	26.2	2.41 *	1.5	0.8	26.0	2.09 *	1.8	0.6	16	LU
LLREUH	23.1	24.9	22.7	22.3	23.2	-0.36	1.8	1.1	23.2	-0.47	1.6	0.7	16	LA
M3VBN2	22.6	23.5	24.5	25.8	24.1	0.47	2.0	1.4	23.2	-0.48	1.9	1.1	16	LY
M3VBN2_AL	23.6	23.2	23.9	24.2	23.7	0.12	1.8	0.4	91.1	63.77 X	6.8	96.1 H	16	XX
NCWT2P	23.0	24.0	24.7	23.0	23.7	0.07	1.6	0.8	23.7	-0.08	1.7	0.7	16	XX
NNDHYV	14.0 X	14.6 X	15.2 X	17.9 X	15.4	-7.63 X	2.1	1.7 H	15.4	-7.85 X	2.1	1.7	4	LZ
NNDHYV_AL	43.0 XL	41.2 XL	40.8 XL	40.8 XL	41.5	16.69 X	0.0	1.0	41.5	16.76 X	0.0	1.0	4	AL
P9UEQ6	25.7 L	25.6	24.9	26.0	25.5	1.80	1.6	0.5	25.1	1.29	1.6	0.8	15	LU
P9UEQ6_AL	24.4	24.1	24.2	23.7	24.1	0.45	1.4	0.3	24.0	0.23	1.5	0.6	16	AL
Q3Y29E	21.8	22.7	23.2	23.7	22.9	-0.69	1.7	0.8	23.5	-0.21	1.6	0.7	16	LY
QG4ZGK	43.3 XH	43.8 X	44.9 XH	43.6 XH	43.9	18.96 X	2.9	0.7	42.2	17.47 X	2.9	1.5	16	TT
QR3X3Y	24.1	22.6	24.7	23.8	23.8	0.18	1.7	0.9	24.8	1.01	1.8	1.3	12	LA
R98HJN	23.8	22.6	23.4	23.0	23.2	-0.38	1.1	0.5	23.0	-0.68	1.2	0.5	16	BK
TMGV9Y	23.4	24.7	24.3	23.6	24.0	0.35	1.8	0.6	24.2	0.43	1.7	0.5	14	LY
UK4UDB	22.3	23.0	25.1 H	24.6	23.8	0.14	2.1	1.3	24.6	0.84	2.1	1.2	16	LH
UR7RAU	23.5	23.2	23.2	24.4 H	23.6	-0.03	1.8	0.5	23.7	-0.01	1.9	0.7	12	LW
V2B3GK	23.2	22.9	23.3	22.6	23.0	-0.55	1.4	0.3	23.3	-0.40	1.3	0.4	16	TT
VQ8VCK	20.6 *	21.6	20.8 *	21.7	21.2	-2.29 *	1.6	0.5	23.3	-0.39	1.8	1.4	16	TT
VWY7LH	21.7 L	22.2	22.0	22.6	22.1	-1.38	1.1	0.4	22.1	-1.57	1.2	0.4	16	LH
WF6X4B	23.8	24.1	23.0	22.7	23.4	-0.19	1.8	0.7	22.9	-0.84	1.8	0.7	16	LA
WKX93F_AL	23.8	22.6	23.5	24.6	23.6	0.04	1.4	0.8	23.6	-0.12	1.7	0.6	16	AL
XLAZWH	23.9	23.4	24.8 L	23.9	24.0	0.37	2.1	0.6	24.4	0.61	1.9	1.0	16	LA
Y7CFQE_AL	23.9	23.1	23.1	22.9	23.3	-0.33	1.3	0.4	23.7	-0.01	1.4	0.6	16	AK
YRQBV3	21.2	21.5	21.3	20.7 *	21.2	-2.27 *	1.9	0.4	21.2	-2.38 *	1.8	0.8	16	LH

Consensus (All Labs) Results														
Wk Mean	23.52	23.61	23.73	23.65	Month Mean	23.61	Grand Mean	23.74						
Avg SDr	1.67	1.70	1.65	1.67	Avg SD	1.67	Avg SD	1.69						
SD btwn Labs	1.22	1.22	1.35	1.36	SD btwn Labs	1.07	SD btwn Labs	1.06						
Labs Incl	57	57	58	57	SD btwn Wks	0.78	SD btwn Wks	1.03						
Labs Excl	6	6	5	5	Labs Incl	57	Labs Incl	57						
Labs not Rcvd	0	0	0	1										



Containerboard Interlaboratory Testing Program
Analysis 223
STFI, 42 lb Linerboard - 42F3
TAPPI Official Test Method T826

Report #620 (E)
May 2021

Key to Instrument Codes Reported by Participants

AK	L & W Autoline 300	AL	L & W Autoline 400
BK	Buchel Strip Compression Tester BK-155	LA	L&W Autoline (223 Enrollment)
LH	L&W 282	LU	L&W 52 without moisture correction(was 53)
LW	L&W 53 with moisture correction (was 53M)	LY	L&W 152 without moisture correction
LZ	L&W (model not specified)	TT	TMI Short Span Compression, 17-34 (MB K455)
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program

Analysis 224

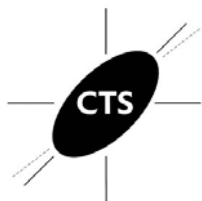
Report #620 (E)

May 2021

STFI, 56 lb Linerboard - 56G2

TAPPI Official Test Method T826

WebCode	Weekly Means				Monthly Results					Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks		
2EG4EW	49.1 XL	49.2 XL	49.8 XL	50.2 XL	49.6	7.83 X	0.0	0.5	49.6	7.83 X	0.0	0.5	4	LH	
2TFA9R_AL	36.3	34.6	33.0	34.8	34.7	-0.01	2.3	1.4	34.7	-0.01	2.3	1.4	4	AL	
4RW332	34.8	34.4	33.1	35.8	34.5	-0.08	2.0	1.1	34.5	-0.08	2.0	1.1	4	XX	
6GU6PL	32.2	33.6	33.7	31.9	32.9	-0.95	2.1	0.9	32.9	-0.95	2.1	0.9	4	LW	
742R6V	39.1 *	37.1	40.0 *	38.7 H	38.7	2.13 *	2.9	1.2	38.7	2.13 *	2.9	1.2	4	LZ	
7BK9JQ	33.9 L	34.0	36.0	35.9 H	35.0	0.14	2.4	1.1	35.0	0.14	2.4	1.1	4	LH	
7BK9JQ_AL	36.0	32.0 H	36.3	33.3	34.4	-0.15	5.0	2.1	34.4	-0.15	5.0	2.1	4	AL	
7GAQYM	32.6	32.0	32.3	31.7	32.1	-1.33	2.3	0.4	32.1	-1.33	2.3	0.4	4	LU	
7H4CVY	36.7	35.1	35.2	34.9	35.5	0.42	2.3	0.8	35.5	0.42	2.3	0.8	4	LH	
7K92VM	33.6	31.0	30.7	30.9	31.5	-1.65	2.5	1.4	31.5	-1.65	2.5	1.4	4	LY	
7N9B44_AL	33.3	37.0	37.0	37.8	36.3	0.84	2.4	2.0	36.3	0.84	2.4	2.0	4	AL	
8A2V8Y_AL	36.3 H	33.5	37.9	37.6	36.3	0.86	2.9	2.0	36.3	0.86	2.9	2.0	4	AK	
8BDJUI_AL	34.7	29.8 *	27.9 XL	31.4	30.9	-1.96 *	1.9	2.9 H	30.9	-1.96 *	1.9	2.9 H	4	AL	
8R2LN2	34.6	35.1	35.1	34.7	34.9	0.10	2.9	0.3	34.9	0.10	2.9	0.3	4	LA	
974MMN_AL	33.1	33.2	32.3	32.6 L	32.8	-0.98	2.1	0.4	32.8	-0.98	2.1	0.4	4	AL	
9TEMWL	45.6 XL	41.3 XL	45.6 XL	45.3 XL	44.4	5.13 X	0.0	2.1	44.4	5.13 X	0.0	2.1	4	LZ	
BGC7YG_AL	34.3 L	33.0	34.9	34.3	34.1	-0.29	2.3	0.8	34.1	-0.29	2.3	0.8	4	AL	
BMD8C4	39.1 *	38.5 *	39.7 *	39.3	39.2	2.36 *	2.6	0.5	39.2	2.36 *	2.6	0.5	4	LH	
C826DF	33.0	31.9	32.3	31.7 H	32.2	-1.29	2.8	0.6	32.2	-1.29	2.8	0.6	4	LW	
CBXZN3	33.1	34.4	33.8	33.6	33.7	-0.50	2.4	0.6	33.7	-0.50	2.4	0.6	4	LU	
CUDARN	34.1	34.2	36.1	35.0	34.9	0.09	2.5	0.9	34.9	0.09	2.5	0.9	4	LH	
DFTYQ4	33.3	33.9	34.5	34.1	34.0	-0.38	2.1	0.5	34.0	-0.38	2.1	0.5	4	LA	
DFTYQ4_AL	32.8	33.0	34.1	34.7	33.7	-0.54	2.4	0.9	33.7	-0.54	2.4	0.9	4	AL	
DHJ2WR	35.2	35.3	34.2	35.5	35.1	0.20	1.9	0.6	35.1	0.20	1.9	0.6	4	LA	
DJA6ME_AL	33.2	33.8	33.8	35.1	34.0	-0.37	2.0	0.8	34.0	-0.37	2.0	0.8	4	AK	
DVMGRV	36.1	35.8	32.7	35.4	35.0	0.17	2.1	1.6	35.0	0.17	2.1	1.6	4	LA	
ECNTMH_AL	35.8	35.0	35.5	33.7 L	35.0	0.16	2.1	0.9	35.0	0.16	2.1	0.9	4	XX	
EGL8FY	34.3	34.2	34.0	33.3	33.9	-0.39	2.1	0.5	33.9	-0.39	2.1	0.5	4	LU	
EHBGLU	34.7	34.5	33.2	37.7 H	35.0	0.17	2.8	1.9	35.0	0.17	2.8	1.9	4	LU	
FJQ3VW	35.3	36.3	35.0	No DATA	35.6	0.46	2.3	0.7	35.6	0.46	2.3	0.7	3	LA	
G237UT	33.0	33.9	33.2	33.2	33.3	-0.71	2.2	0.4	33.3	-0.71	2.2	0.4	4	LU	
GAUKXY_AI	38.1	38.6 *	38.8	38.0	38.4	1.94 *	2.7	0.4	38.4	1.94 *	2.7	0.4	4	AL	
GBP6JD	35.0	35.8 L	35.7	37.5	36.0	0.69	2.3	1.1	36.0	0.69	2.3	1.1	4	LU	
J77UKY	35.4	35.0 L	34.7	34.3	34.8	0.08	1.6	0.5	34.8	0.08	1.6	0.5	4	TT	
J992CQ	34.4	33.2	33.6	33.7	33.7	-0.50	2.0	0.5	33.7	-0.50	2.0	0.5	4	LZ	



Containerboard Interlaboratory Testing Program

Analysis 224

Report #620 (E)

May 2021

STFI, 56 lb Linerboard - 56G2

TAPPI Official Test Method T826

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
JPZRK7	34.4	35.2	35.1	35.5	35.0	0.19	2.4	0.5	35.0	0.19	2.4	0.5	4	LU
JXUT2K	37.9 H	37.6	38.0 H	40.4 *	38.5	1.99 *	3.3	1.3	38.5	1.99 *	3.3	1.3	4	LZ
K2RTHT	35.5	35.4 L	35.9	34.2 L	35.3	0.30	1.5	0.7	35.3	0.30	1.5	0.7	4	LA
KZBKN7	33.9	33.9	34.0	32.4	33.5	-0.60	2.2	0.7	33.5	-0.60	2.2	0.7	4	LW
LGG4Y4	38.6 *L	38.8 *	38.0	40.9 *	39.1	2.30 *	2.2	1.3	39.1	2.30 *	2.2	1.3	4	LU
LLREUH	34.1	37.2	33.7	33.8	34.7	0.01	2.5	1.7	34.7	0.01	2.5	1.7	4	LU
M3VBN2	36.0	34.3	35.4	38.0	35.9	0.65	2.5	1.5	35.9	0.65	2.5	1.5	4	LY
M3VBN2_AL	35.8	34.0	36.2	35.2	35.3	0.32	2.2	1.0	35.3	0.32	2.2	1.0	4	XX
NCWT2P	35.2	36.3	36.0	34.5	35.5	0.42	2.2	0.8	35.5	0.42	2.2	0.8	4	XX
NNDHYV	24.8 X	23.8 X	23.1 X	26.1 X	24.4	-5.39 X	2.3	1.3	24.4	-5.39 X	2.3	1.3	4	LZ
NNDHYV_AI	40.9 XL	43.4 XL	42.0 XL	42.4 XL	42.2	3.95 X	0.0	1.0	42.2	3.95 X	0.0	1.0	4	XX
P9UEQ6	38.3 *	37.6	36.2	36.9	37.3	1.36	2.0	0.9	37.3	1.36	2.0	0.9	4	LA
P9UEQ6_AL	34.9	35.8	35.9	35.0	35.4	0.36	2.4	0.5	35.4	0.36	2.4	0.5	4	AL
Q3Y29E	33.7	33.8	32.4	34.3	33.5	-0.60	2.4	0.8	33.5	-0.60	2.4	0.8	4	LZ
QG4ZGK	44.9 X	44.7 X	46.7 XH	46.7 XH	45.8	5.82 X	3.2	1.1	45.8	5.82 X	3.2	1.1	4	TT
QR3X3Y	36.4	32.9	31.6	38.0	34.7	0.02	2.0	3.0 H	34.7	0.02	2.0	3.0 H	4	LA
R98HJN	34.6 L	35.5 L	33.5	32.7 L	34.1	-0.32	1.2	1.2	34.1	-0.32	1.2	1.2	4	BK
TMGV9Y	35.8	35.1	35.0	34.6	35.1	0.23	2.4	0.5	35.1	0.23	2.4	0.5	4	LW
UK4UDB	34.1	34.2	36.1	37.2	35.4	0.38	2.8	1.5	35.4	0.38	2.8	1.5	4	LH
UR7RAU	33.0 H	33.3	34.3	34.1	33.7	-0.54	2.6	0.6	33.7	-0.54	2.6	0.6	4	LW
V2B3GK	35.5 L	35.2 L	35.8 L	35.9	35.6	0.47	1.4	0.3	35.6	0.47	1.4	0.3	4	TT
VQ8VCK	31.6	31.2	30.9	30.7	31.1	-1.88	1.7	0.4	31.1	-1.88	1.7	0.4	4	TT
VWY7LH	32.6	32.7 L	32.7	32.7	32.7	-1.05	1.6	0.0 L	32.7	-1.05	1.6	0.0 L	4	LH
WF6X4B	34.3	35.6	32.2	34.5	34.2	-0.28	2.4	1.4	34.2	-0.28	2.4	1.4	4	LA
WKX93F_AL	34.4	33.6	34.8	33.1 H	34.0	-0.37	2.8	0.8	34.0	-0.37	2.8	0.8	4	AL
XLAZWH	37.0	36.9	37.3	36.2	36.9	1.14	2.5	0.5	36.9	1.14	2.5	0.5	4	LA
Y7CFQE_AL	35.2	31.2	34.2	33.4	33.5	-0.62	2.2	1.7	33.5	-0.62	2.2	1.7	4	XX
YRQBV3	29.4 XH	31.1	30.1 *	28.3 *H	29.7	-2.60 *	3.1	1.2	29.7	-2.60 *	3.1	1.2	4	LH

Consensus (All Labs) Results														
Wk Mean	34.91	34.49	34.69	34.81	Month Mean	34.68	Grand Mean	34.68						
Avg SDr	2.30	2.70	2.28	2.32	Avg SD	2.41	Avg SD	2.41						
SD btwn Labs	1.73	1.98	2.13	2.45	SD btwn Labs	1.90	SD btwn Labs	1.90						
Labs Incl	57	58	57	57	SD btwn Wks	1.16	SD btwn Wks	1.16						
Labs Excl	6	5	6	5	Labs Incl	58	Labs Incl	58						
Labs not Rcvd	0	0	0	1										



Containerboard Interlaboratory Testing Program
Analysis 224
STFI, 56 lb Linerboard - 56G2
TAPPI Official Test Method T826

Report #620 (E)
May 2021

Key to Instrument Codes Reported by Participants

AK	L & W Autoline 300	AL	L & W Autoline 400
BK	Buchel Strip Compression Tester BK-155	LA	L&W Autoline (224 Enrollment)
LH	L&W 282	LU	L&W 52 without moisture correction (was 53)
LW	L&W 53 with moisture correction (was 53M)	LY	L&W 152 with moisture correction
LZ	L&W (model not specified)	TT	TMI Short Span Compression, 17-34 (MB K455)
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program
 Analysis 228
Roughness - Stylus Method, 42 lb Linerboard - 42F3
 TAPPI Official Test Method T575

Report #620 (E)
May 2021

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
7BK9JQ_AL	138.0	0.21	13.76	131.9	-0.23	7.95	4	AL
7GAQYM	158.1	1.53	16.29	155.1	1.77	3.19	4	EV
7K92VM	151.5	1.09	12.37	147.5	1.12	6.93	4	EV
8A2V8Y_AL	132.1	-0.18	14.85	126.1	-0.72	9.36	4	AK
8BDJUI_AL	146.0	0.74	11.67	150.6	1.38	6.61	4	AL
8R2LN2	137.4	0.17	10.88	138.1	0.31	2.34	4	LS
974MMN_AL	123.1	-0.77	8.18	124.7	-0.84	2.61	4	XX
9M9U3Q	132.7	-0.14	21.12	136.4	0.16	2.78	4	LS
BGC7YG_AL	125.9	-0.58	14.80	125.6	-0.76	6.38	4	AL
C826DF	152.6	1.17	11.62	143.3	0.76	6.57	4	EV
CTJCRU	121.8	-0.85	20.07	117.7	-1.44	3.75	4	EV
DFTYQ4	247.6	7.41 X	31.95 H	194.9	5.18 X	74.53	2	LA
DFTYQ4_AL	159.9	1.65	21.31	151.0	1.41	12.66	2	AL
DJA6ME	116.8	-1.18	11.49	120.0	-1.24	3.91	4	LS
DJA6ME_AL	108.4	-1.73	14.14	114.2	-1.75	8.16	2	AK
DVMGRV	144.5	0.64	20.03	138.5	0.34	9.43	4	LA
EHBGLU	138.8	0.26	7.10	137.7	0.28	11.58	4	EV
FJQ3VW	133.5	-0.08	23.29	132.0	-0.22	8.70	4	LA
GAUKXY_AL	169.8	2.30 *	16.16	155.3	1.78	12.99	3	AL
GBP6JD	104.6	-1.98 *	10.24	136.4	0.16	38.79 H	4	EV
JXUT2K	197.7	4.13 X	22.40	226.8	7.91 X	45.64 H	4	LS
K2RTHT	115.5	-1.27	11.13	114.4	-1.72	2.68	4	EV
KZBKN7	141.0	0.41	17.53	137.9	0.29	4.43	4	LA
M3VBN2_AL	121.0	-0.91	17.53	131.3	-0.27	9.10	4	XX
NNDHYV_AL	144.6	0.65	22.25	144.6	0.87	0.00	1	AL
P9UEQ6_AL	123.4	-0.75	19.90	122.5	-1.03	2.18	4	AL
Q3Y29E	144.9	0.67	9.83	148.0	1.16	7.93	3	EV
QR3X3Y	127.5	-0.48	13.79	128.6	-0.51	1.93	3	LA
TMGV9Y	136.9	0.14	10.98	134.9	0.03	1.44 L	4	LS
UK4UDB	132.2	-0.17	9.99	132.8	-0.15	6.33	4	EV
UR7RAU	112.6	-1.46	7.75	115.2	-1.66	5.00	4	XX
WKX93F_AL	132.6	-0.14	12.18	129.9	-0.40	9.73	4	AL
XLAZWH	143.1	0.55	13.56	140.6	0.52	2.37	4	LA
Y7CFQE	142.1	0.48	21.47	141.4	0.59	6.40	4	EV



Containerboard Interlaboratory Testing Program
Analysis 228
Roughness - Stylus Method, 42 lb Linerboard - 42F
TAPPI Official Test Method T575

Report #620 (E)
May 2021

Consensus (All Labs) Results

Month Mean	134.78	Grand Mean	134.51
Avg SD	15.30	Avg SD Months	9.80
SD btwn Labs	15.23	SD btwn Labs	11.66
Labs Incl	32	Labs Incl	32

Key to Instrument Codes Reported by Participants

AK	L & W Autoline 300	AL	L & W Autoline 400
EV	Emveco Microgage Model 210-R	LA	L&W Autoline (228 Enrollment)
LS	L&W 263	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 229
Roughness - Sheffield Method, 42 lb Linerboard - 42F3
 TAPPI Official Test Method T538

Report #620 (E)
May 2021

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
2TFA9R_AL	359.5	-0.02	5.02	358.6	0.07	1.62	4	AL
7BK9JQ_AL	358.1	-0.24	6.12	349.4	-1.36	6.23	4	AL
7N9B44	371.7	1.90 *	10.24	364.5	0.99	8.66	4	PP
8A2V8Y_AL	351.9	-1.22	3.96 L	351.6	-1.02	2.06	4	AK
AM4UJ3	407.0	7.47 X	5.22	404.4	7.18 X	7.27	4	TS
DFTYQ4_AL	359.1	-0.09	13.03	355.3	-0.45	5.44	2	AL
DHJ2WR	358.0	-0.26	7.62	363.9	0.89	4.04	4	XX
ECNTMH_AL	372.5	2.03 *	8.20	371.6	2.08 *	7.30	4	AL
G237UT	362.4	0.43	4.30	363.0	0.76	5.82	4	XX
J992CQ	354.6	-0.80	10.71	357.1	-0.17	3.30	4	XX
M3VBN2_AL	362.6	0.47	15.59 H	237.4	-18.75 X	135.63 H	4	XX
WKX93F_AL	355.6	-0.64	6.74	352.5	-0.87	3.65	4	AL
Y7CFQE	354.7	-0.78	13.79	355.8	-0.36	1.73	4	XX
Y7CFQE_AL	354.7	-0.78	10.03	354.6	-0.55	4.65	4	AK

Consensus (All Labs) Results			
Month Mean	359.65	Grand Mean	358.15
Avg SD	9.57	Avg SD Months	5.02
SD btwn Labs	6.35	SD btwn Labs	6.44
Labs Incd	13	Labs Incd	12

Key to Instrument Codes Reported by Participants

- | | |
|---|--|
| AK L & W Autoline 300
PP Technidyne Profile/Plus
XX Instrument make/model not specified by lab | AL L & W Autoline 400
TS TMI Monitor/Smoothness |
|---|--|



Containerboard Interlaboratory Testing Program
 Analysis 231
Internal Bond, 42 lb Linerboard - 42F
 TAPPI Official Test Method T569

Report #620 (E)
May 2021

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
2TFA9R	95.3	-0.02	3.75	94.9	-0.03	4.28	4	TM
7GAQYM	93.4	-0.21	3.36	88.5	-0.60	4.78	4	TM
7MEP9R	102.6	0.66	3.51	101.5	0.54	1.00	L 3	HY
7N9B44	108.8	1.25	4.09	106.0	0.95	2.86	4	HY
7XV766	107.0	1.08	4.30	107.3	1.06	3.71	3	TM
8A2V8Y	77.8	-1.68	4.32	83.7	-1.03	7.89	4	TM
8BDJUU	106.0	0.99	3.08	149.9	4.82	X 38.67	H 4	SC
974MMN	101.8	0.59	4.66	113.8	1.63	10.97	4	TM
9M9U3Q	99.8	0.40	0.84	L 98.2	0.25	1.37	4	HY
CTJCRU	90.6	-0.47	0.55	L 94.2	-0.10	4.37	4	HY
DFTYQ4	92.4	-0.30	6.58	94.0	-0.11	2.26	2	TM
DHJ2WR	86.8	-0.83	1.64	86.9	-0.74	2.19	4	SC
DJA6ME	87.5	-0.77	2.79	89.2	-0.54	4.22	4	TM
ECNTMH	40.2	-5.24	X 0.94	L 40.4	-4.84	X 1.39	4	LZ
EHBGLU	84.6	-1.04	4.72	82.2	-1.16	1.89	4	TM
G237UT	105.2	0.91	5.78	105.8	0.92	2.46	4	HY
GAUKXY	111.0	1.46	9.62	H 110.5	1.34	7.14	4	SC
GBP6JD	79.8	-1.49	4.02	81.8	-1.19	4.78	4	TM
JXUT2K	85.6	-0.95	1.95	82.3	-1.15	2.46	4	TM
K2RTHT	97.8	0.21	4.60	89.2	-0.54	5.78	4	TM
KZBKN7	112.2	1.57	3.42	119.0	2.09	* 17.90	H 4	HY
LLREUH	98.7	0.29	2.41	100.2	0.43	3.89	4	HZ
MFGCHM	85.1	-1.00	1.99	88.6	-0.59	4.29	3	TM
Q3Y29E	98.5	0.28	6.16	88.8	-0.57	8.21	4	XX
UK4UDB	104.8	0.87	8.58	H 104.2	0.79	6.18	4	SC
W6889V	406.0	29.39	X 32.75	H 206.9	9.85	X 152.88	H 4	SC
Z9V3BD	76.5	-1.81	0.81	L 76.5	-1.66	0.00	1	TM

Consensus (All Labs) Results			
Month Mean	95.58	Grand Mean	95.29
Avg SD	4.48	Avg SD Months	6.18
SD btwn Labs	10.56	SD btwn Labs	11.33
Labs Incd	25	Labs Incd	24



Containerboard Interlaboratory Testing Program
Analysis 231
Internal Bond, 42 lb Linerboard - 42F
TAPPI Official Test Method T569

Report #620 (E)
May 2021

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	93.89	10.47	1.69	21
Modified Scott Bond Mechanics	108.72	4.92	13.14	2

Analysis Notes

ECNTMH - Method used is not covered in this test. Data excluded from consensus calculation.

Key to Instrument Codes Reported by Participants

HY	Huygen Digitized Scott Internal Bond Tester	HZ	Huygen Internal Bond Tester with AccuPress
LZ	L&W (model not specified)	SC	Scott Internal Bond Tester (Manual)
TM	TMI Monitor/Internal Bond Tester	XX	Instrument make/model not specified by lab



Containerboard Interlaboratory Testing Program
 Analysis 234
COF Inclined Plane (Slide Angle), 42 Ib Linerboard - 42F
 TAPPI Official Test Method T815

Report #620 (E)
May 2021

WebCode	Monthly Results			Cumulative Results			
	Mean	CPV	SD	Mean	CPV	SD Months	Months
3LED32	32.6	1.26	3.05	29.1	0.41	5.36	H 4
7GAQYM	30.0	0.43	2.35	29.0	0.36	2.16	4
7K92VM	31.8	0.99	2.45	30.1	0.82	1.63	4
7MEP9R	23.8	-1.56	4.76	25.0	-1.33	2.80	3
7N9B44	31.6	0.94	1.52	31.1	1.26	0.81	4
8A2V8Y	30.6	0.63	1.78	29.9	0.75	1.92	4
8BDJUI	30.1	0.47	0.96	32.6	1.89	1.66	4
8R2LN2	27.2	-0.47	0.84	27.1	-0.46	0.19	L 4
974MMN	28.4	-0.09	4.77	28.7	0.23	1.72	4
B3EVTX	34.6	1.90	1.52	31.9	1.60	2.58	4
BGC7YG	26.6	-0.66	2.07	26.4	-0.73	1.80	4
BU3TB4	25.2	-1.11	3.56	25.2	-1.24	0.16	L 4
C826DF	27.0	-0.54	1.22	25.8	-1.01	2.18	4
CUDARN	24.0	-1.49	3.42	26.5	-0.67	1.69	4
DFTYQ4	25.6	-0.98	0.89	25.3	-1.20	0.42	2
DHJ2WR	28.6	-0.02	0.55	L 28.7	0.24	0.26	L 4
DJA6ME	28.2	-0.15	3.56	27.2	-0.39	0.71	4
DVMGRV	26.1	-0.82	1.98	25.0	-1.34	2.18	4
ECNTMH	28.2	-0.15	0.84	26.7	-0.63	3.27	4
EHBGLU	35.2	2.09 *	2.39	31.1	1.26	2.82	4
G237UT	25.6	-0.98	1.32	27.2	-0.40	3.13	4
GAUKXY	25.8	-0.92	0.84	25.0	-1.33	2.37	4
GBP6JD	27.8	-0.28	4.49	28.7	0.24	4.59	H 4
J992CQ	32.2	1.13	2.41	30.8	1.12	2.89	4
JXUT2K	22.6	-1.95 *	1.82	23.7	-1.88	0.96	4
KZBKN7	30.8	0.68	2.77	29.8	0.69	2.05	4
Q3Y29E	24.6	-1.31	2.30	25.9	-0.96	2.56	4
TMGV9Y	29.2	0.17	6.16	H 29.0	0.37	0.78	4
UK4UDB	29.4	0.23	1.14	29.0	0.36	0.51	4
UR7RAU	31.4	0.88	5.37	H 26.9	-0.54	3.31	4
WKX93F	29.4	0.24	2.76	29.4	0.54	0.76	4
XFY3XA	31.6	0.94	2.07	31.9	1.60	0.60	4
Y7CFQE	30.3	0.52	2.88	29.0	0.36	1.51	4



Containerboard Interlaboratory Testing Program
Analysis 234
COF Inclined Plane (Slide Angle), 42 lb Linerboard - 42F
TAPPI Official Test Method T815

Report #620 (E)
May 2021

Consensus (All Labs) Results			
Month Mean	28.67	Grand Mean	28.13
Avg SD	2.82	Avg SD Months	2.25
SD btwn Labs	3.12	SD btwn Labs	2.36
Labs Incl	33	Labs Incl	33

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



Containerboard Interlaboratory Testing Program
Analysis 237

Report #620 (E)
May 2021

Air Resistance, 42 lb Linerboard - 42F3

TAPPI Official Test Method T460

WebCode	Monthly Results				Cumulative Results					
	Mean	CPV	SD		Mean	CPV	SD	Months	Months	Inst
2TFA9R_AL	21.8	-0.54	1.24		21.8	-0.45	0.12	L	4	AL
7BK9JQ_AL	23.0	0.46	0.99		23.0	0.42	0.06	L	4	AL
7GAQYM	20.8	-1.38	3.44	H	24.3	1.36	2.80		4	GA
7H4CVY	21.5	-0.77	1.96		21.7	-0.60	0.21		2	XX
7N9B44	22.4	-0.07	3.64	H	22.9	0.30	1.33		4	TP
8A2V8Y_AL	20.7	-1.45	2.49		19.0	-2.59 *	1.52		4	AK
8BDJUI_AL	24.3	1.52	1.49		19.0	-2.59 *	8.73	H	4	AL
8R2LN2	21.8	-0.52	1.23		21.7	-0.56	0.14	L	4	LA
974MMN_AL	22.4	-0.03	1.20		23.1	0.49	1.00		4	XX
9M9U3Q	22.5	0.04	1.89		22.2	-0.15	0.61		4	LP
9WEW63	24.9	2.00 *	4.77	H	24.4	1.48	1.24		4	GG
B3EVTX_AL	22.6	0.14	0.97		22.6	0.09	0.32	L	4	AL
BGC7YG_AL	22.0	-0.36	1.42		22.0	-0.31	0.49		4	AL
C826DF	18.5	-3.24 X	0.80	L	18.3	-3.09 X	0.90		4	XX
DFTYQ4	24.9	1.99 *	1.50		25.3	2.16 *	0.63		2	LA
DFTYQ4_AL	24.1	1.36	1.78		24.1	1.27	0.04		2	AL
DJA6ME_AL	21.7	-0.65	1.61		21.8	-0.50	0.30	L	4	AK
DVMGRV	21.2	-1.00	1.34		21.5	-0.71	0.53		4	LA
ECNTMH_AL	23.8	1.08	1.34		23.9	1.09	1.18		4	AL
EHBGLU_AL	22.1	-0.32	1.57		22.4	-0.04	0.34		4	AL
FJQ3VW	20.3	-1.77	1.48		20.8	-1.25	0.73		2	XX
G237UT	21.1	-1.07	2.52		22.1	-0.23	0.77		4	TP
GAUKXY_AL	21.8	-0.52	2.39		21.7	-0.60	3.32		4	AL
GBP6JD_AL	24.1	1.35	2.43		23.6	0.83	0.79		4	AL
J992CQ	24.1	1.38	3.38		23.4	0.71	1.29		4	GA
JXUT2K	23.2	0.61	4.37	H	24.1	1.26	5.57	H	4	TD
KU8HMC	23.1	0.52	1.81		23.7	0.95	0.83		4	LP
KZBKN7	22.9	0.37	1.79		22.7	0.19	0.43		4	LP
M3VBN2_AL	23.4	0.79	2.24		22.8	0.28	0.41		4	XX
P9UEQ6	22.2	-0.19	2.11		22.1	-0.28	0.70		4	GG
P9UEQ6_AL	23.2	0.61	1.69		22.7	0.17	0.55		4	AL
Q3Y29E	21.4	-0.83	1.03		22.9	0.31	0.99		4	LP
QR3X3Y	23.0	0.45	0.29	L	23.5	0.76	0.56		3	LA
R7XK77	22.5	0.07	1.23		22.2	-0.21	0.51		4	LP
TMGV9Y	21.4	-0.88	1.46		21.7	-0.53	0.62		4	XX
UK4UDB	22.7	0.20	1.37		22.9	0.34	0.25	L	4	LP
UR7RAU	21.9	-0.44	1.97		22.0	-0.38	0.73		4	LP
VWHXLV	19.7	-2.26 *	2.62		20.3	-1.62	2.16		4	GA
WKX93F_AL	21.0	-1.17	1.05		20.7	-1.28	0.52		4	AL



Containerboard Interlaboratory Testing Program
Analysis 237

Report #620 (E)
May 2021

Air Resistance, 42 lb Linerboard - 42F

TAPPI Official Test Method T460

WebCode	Monthly Results			Cumulative Results				
	Mean	CPV	SD	Mean	CPV	SD Months	Months	Inst
X23WU8	22.5	0.04	2.07	21.7	-0.58	0.95	4	XX
XFY3XA	22.0	-0.40	2.34	17.5	-3.68 X	7.48 H	4	LA
XLAZWH	24.2	1.40	1.76	23.8	1.03	1.09	4	LA
Y7CFQE_AL	22.7	0.23	1.62	22.4	-0.01	0.82	4	AK

Consensus (All Labs) Results			
Month Mean	22.44	Grand Mean	22.45
Avg SD	2.13	Avg SD Months	1.92
SD btwn Labs	1.23	SD btwn Labs	1.33
Labs Includ	42	Labs Includ	41

Key to Instrument Codes Reported by Participants

- | | | | |
|----|---|----|---|
| AK | L & W Autoline 300 | AL | L & W Autoline 400 |
| GA | Gurley Precision #4340 Automatic Densometer | GG | Gurley Precision #4320 Densometer |
| LA | L&W Autoline (237 Enrollment) | LP | L&W Air Permeance Tester SE 166 |
| TD | TMI Gurley Densometer | TP | Technidyne Profile/ plus Roughness & Porosity |
| XX | Instrument make/model not specified by lab | | |



Containerboard Interlaboratory Testing Program
Analysis 240

Report #620 (E)
May 2021

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM11

TAPPI Official Test Method T809

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
2AMAHV	57.9 L	58.0 L	57.7 L	57.8 L	57.8	-0.02	1.3	0.1 L	57.8	-0.09	1.6	0.1 L	16	LD
7GAQYM	58.2	57.9	59.0	59.3	58.6	0.28	3.6	0.7	57.8	-0.13	3.5	1.6	16	LD
7H4CVY	52.4	55.0	52.2	54.1	53.4	-1.81	3.5	1.3	53.7	-1.78	3.7	2.2	16	LD
7K92VM	61.4	58.2	62.9	59.2	60.4	1.01	3.4	2.1	59.4	0.55	4.0	1.6	16	EN
7L3MQY	66.4 X	67.4 X	68.6 X	67.5 X	67.5	3.87 X	3.6	0.9	64.6	2.67 * 4.0	2.5	16	LC	
7N9B44	59.3	60.6	63.0	61.6	61.1	1.31	3.2	1.6	59.6	0.61	3.4	2.1	16	LD
82PPHM	44.9 X	43.4 X	45.8 X	45.1 X	44.8	-5.29 X	4.6	1.0	45.5	-5.15 X 4.6	1.1	8	TC	
8A2V8Y	53.7	58.2	50.2 *	49.8 *	53.0	-1.99 *	4.3	3.9 H	56.0	-0.86	4.6	2.8	16	LD
8R2LN2	57.5 L	58.2	57.7	57.8 L	57.8	-0.04	1.7	0.3	58.3	0.07	1.9	0.5 L	16	LD
9M9U3Q	No DATA	No DATA	No DATA	57.5 H	57.5	-0.16	5.7	0.0	57.7	-0.14	5.2	5.3 H	5	LD
9TEMWL	52.3 *	55.6	53.3	58.3	54.9	-1.21	4.0	2.7	57.6	-0.21	3.9	2.3	16	EM
BGC7YG	57.1	61.8	58.8	60.2	59.5	0.64	3.3	2.0	57.3	-0.32	3.2	2.1	16	LZ
BMD8C4	55.2	58.5	53.8	58.0	56.4	-0.61	3.7	2.2	55.1	-1.23	3.0	1.9	16	LD
BU3TB4	56.6	58.1	55.1	55.6	56.3	-0.63	4.4	1.3	56.0	-0.86	4.1	1.6	16	LZ
CUDARN	57.4	62.2	60.8	61.4	60.4	1.03	4.3	2.1	59.2	0.47	3.8	1.6	16	LD
DFTYQ4	58.1	59.0 H	62.5 H	57.0	59.2	0.52	4.9	2.4	58.8	0.30	4.4	1.7	8	LD
DVMGRV	50.9 *	52.5 *	54.3	50.1 *	52.0	-2.39 *	4.7	1.9	52.8	-2.17 * 4.9	1.8	16	MB	
E2LKUY	59.3 L	59.5 L	59.5 L	59.6 L	59.5	0.64	1.0	0.2 L	59.4	0.53	1.8	0.2 L	16	LD
ECNTMH	52.4	53.7	52.9	51.3 *	52.6	-2.15 *	2.6	1.0	54.5	-1.47	2.6	1.5	16	LD
EGL8FY	61.2	60.6	59.5	57.8	59.8	0.76	3.5	1.5	59.0	0.38	3.3	1.4	16	LZ
FAXPVW	60.1 L	60.4	60.5 L	60.6 L	60.4	1.02	1.6	0.2 L	60.1	0.84	1.6	0.7	16	MB
FJQ3VW	57.5	55.9	54.9	57.4	56.4	-0.59	3.2	1.3	56.2	-0.77	3.4	1.2	16	MB
FRXYET	58.3 L	57.8	58.1	57.0	57.8	-0.04	1.7	0.6	58.5	0.16	2.3	1.1	16	LC
G237UT	55.7	58.5	58.1	59.9	58.1	0.08	3.3	1.8	57.5	-0.24	3.8	2.0	16	LC
GBP6JD	56.7	57.6	55.9	57.4	56.9	-0.40	3.0	0.8	57.0	-0.45	3.8	1.5	16	LC
GJK74W	60.1	60.6 H	64.5 *H	65.8 *H	62.7	1.96 *	5.6	2.8	61.1	1.23	4.7	2.3	16	LD
J77UKY	60.2	59.0 H	58.8	59.1	59.3	0.57	4.8	0.6	58.3	0.09	4.7	1.1	16	TJ
J992CQ	58.3	57.7	55.7	59.7	57.9	-0.01	2.9	1.6	57.2	-0.36	3.0	1.5	16	LZ
JJBA6A	57.2	56.9	58.0	57.7	57.5	-0.18	3.5	0.5	57.8	-0.12	3.5	0.7	16	LC
JPZRK7	58.0	55.8	57.4	57.9	57.3	-0.25	3.7	1.0	58.4	0.11	4.1	1.4	16	LD
JQUBNT	53.2	54.6	56.8	55.5 L	55.0	-1.16	2.9	1.5	52.8	-2.18 * 2.5	6.9 H	16	TU	
JYJDGN	60.2	54.4	63.8	61.3	59.9	0.83	4.3	4.0 H	63.6	2.28 * 4.3	3.5	16	TH	
K2RHTT	57.7	59.7	60.6	61.1	59.8	0.76	2.6	1.5	60.7	1.06	3.3	1.9	16	LC
KC9C9Q	55.4	57.3	58.7	55.9	56.8	-0.43	2.9	1.5	56.3	-0.73	3.3	0.9	16	TH
KU8HMC	60.1	55.8	54.4	58.1	57.1	-0.33	2.5	2.5	57.8	-0.11	2.9	1.4	16	LD



Containerboard Interlaboratory Testing Program
Analysis 240

Report #620 (E)
May 2021

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM11

TAPPI Official Test Method T809

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
KZBKN7	58.3	57.1	55.8	57.0	57.0	-0.34	3.5	1.0	56.6	-0.62	3.2	1.2	12	LD
LLREUH	56.4	54.8	56.4	56.7	56.1	-0.74	3.4	0.9	56.2	-0.79	3.3	1.4	16	LD
M3VBN2	63.6 *	60.7	61.0	60.3	61.4	1.42	3.5	1.5	58.0	-0.05	3.8	2.8	16	LD
NCWT2P	59.2 L	60.4 L	62.1 L	60.2 L	60.5	1.04	0.8	1.2	60.3	0.92	1.1	1.0	16	XX
NNDHYV	55.6	58.1	54.1	53.9	55.4	-1.00	3.9	1.9	55.4	-1.09	3.9	1.9	4	LD
P2WPA2	58.1	58.1	58.3	57.8	58.1	0.08	3.4	0.2 L	59.8	0.69	31.6	9.2 H	16	LD
P9UEQ6	62.7	61.3	61.7	62.2	62.0	1.65	2.8	0.6	62.5	1.80	3.0	1.3	16	LZ
Q3Y29E	58.2	57.0	56.0	57.6	57.2	-0.28	3.7	0.9	57.8	-0.12	3.7	1.2	16	LZ
QAJXDN	59.8	58.1	58.9	60.9	59.4	0.62	4.1	1.2	59.5	0.59	3.9	1.5	16	LD
R7XK77	59.5	56.5	58.6	58.5	58.3	0.15	3.5	1.2	59.1	0.42	3.5	1.8	16	LD
UR7RAU	58.5	61.0	61.1	58.0	59.7	0.71	3.2	1.6	60.7	1.08	3.6	2.5	12	LD
V2B3GK	58.4	58.5	56.9	55.4 H	57.3	-0.24	5.4	1.5	57.5	-0.25	5.3	1.1	16	TG
VWHXLV	59.5	60.8	62.7	62.6	61.4	1.41	3.8	1.5	60.0	0.78	4.7	2.2	16	LD
VWY7LH	56.6	57.0	59.5	57.5	57.6	-0.10	3.1	1.3	58.2	0.05	2.4	0.9	16	EN
VXDFPG	57.9	57.1	57.2	61.3	58.4	0.19	4.6	2.0	61.0	1.18	4.5	3.9	12	LD
W6889V	54.8	54.0	54.2	54.7	54.4	-1.40	2.6	0.4	53.6	-1.85	2.9	1.5	16	LC
XLAZWH	59.9 H	61.3	60.9	62.7	61.2	1.33	5.4	1.2	60.3	0.92	4.6	1.9	16	TU
XZ9BYU	58.3	57.8	57.1	57.5	57.7	-0.09	3.6	0.5	57.9	-0.09	3.6	0.6 L	16	LD
YGXJXD	58.9	58.8	59.0	58.8	58.9	0.40	3.6	0.1 L	59.2	0.44	3.1	0.5 L	12	LD
YRQBV3	51.9 *	52.3 *	55.8	53.3	53.3	-1.85	3.1	1.8	55.2	-1.18	3.6	2.6	16	TX

Consensus (All Labs) Results														
Wk Mean	57.61	57.89	58.02	58.07	Month Mean	57.89	Grand Mean	58.08						
Avg SDr	3.73	3.50	3.55	3.51	Avg SD	3.61	Avg SD	5.60						
SD btwn Labs	2.72	2.38	3.20	3.08	SD btwn Labs	2.47	SD btwn Labs	2.44						
Labs Incl	52	52	52	53	SD btwn Wks	1.63	SD btwn Wks	2.45						
Labs Excl	2	2	2	2	Labs Incl	53	Labs Incl	54						
Labs not Rcvd	1	1	1	0										



Containerboard Interlaboratory Testing Program

Analysis 240

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM11

TAPPI Official Test Method T809

Report #620 (E)

May 2021

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	EN	Emerson 2200 Series
LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
TC	TMI Monitor/Compression Tester, 17-37	TG	TMI Compression Tester, Model 17-10
TH	TMI Compression Tester, Model 17-76	TJ	TLS Compression Tester, Model CDM-5
TU	TMI Universal Crush Tester (TMI K440)	TX	TMI Crush Tester (model not specified)
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program
Analysis 250

Report #620 (E)
May 2021

Fluted Edge Crush Strength (FCF), 26 lb Corrugating Medium - CM11

TAPPI Official Test Method T843

WebCode	Weekly Means					Monthly Results				Cumulative Results					Inst					
	Week 1	Week 2	Week 3	Week 4		Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks						
2AMAHV	69.1	69.2	69.3	69.1	L	69.2	-0.08	1.7	0.1	L	68.9	0.16	1.7	0.2	L	16	LD			
2EG4EW	51.2	X	50.6	X	51.5	X	51.6	X	51.2	-10.44	X	3.3	0.5	54.0	-14.80	X	3.3	2.6	12	LD
7K92VM	71.1	69.0	64.8	H	70.9	68.9	-0.21	3.3	2.9	68.9	0.19	3.6	3.0	16	EN					
7N9B44	70.0	70.9	68.3	68.9	69.5	0.12	3.6	1.1	69.2	0.51	3.8	1.8	16	LD						
8A2V8Y	65.7	64.6	*	68.0	67.6	66.5	-1.63	3.3	1.6	67.2	-1.54	3.7	2.1	16	LD					
8R2LN2	68.5	69.0	69.3	68.9	L	68.9	-0.22	1.8	0.3	68.9	0.13	1.8	0.3	L	16	LD				
9M9U3Q	No DATA	No DATA	No DATA	73.3	XH	73.3	2.29	*	6.1	0.0	69.1	0.33	4.1	6.7	H	5	LD			
BGC7YG	67.3	69.5	68.1	68.7	68.4	-0.52	3.5	0.9	68.0	-0.74	3.6	1.3	16	LZ						
DFTYQ4	68.3	H	70.4	66.0	70.0	68.7	-0.36	4.0	2.0	68.5	-0.18	3.7	1.5	8	LD					
ECNTMH	71.1	68.5	67.2	69.8	69.1	-0.09	3.2	1.7	68.0	-0.73	3.5	1.9	16	LD						
EGL8FY	70.2	L	71.9	70.1	68.6	70.2	0.52	2.3	1.3	69.0	0.24	2.8	1.6	16	LZ					
FAXPVW	67.4	67.5	67.4	66.9	*L	67.3	-1.16	1.6	0.3	L	67.6	-1.15	1.6	1.1	16	MB				
G237UT	69.9	70.8	66.3	70.7	H	69.4	0.08	4.1	2.1	71.1	2.35	*	3.2	1.9	16	LC				
GBP6JD	60.4	XH	71.0	73.0	70.3	68.7	-0.36	4.5	5.6	H	68.7	-0.03	4.1	4.2	16	LC				
JBA6A	68.0	68.7	68.9	69.2	68.7	-0.35	4.1	0.5	68.3	-0.46	4.1	0.8	16	LD						
KU8HMC	67.1	66.0	70.7	68.7	68.1	-0.70	3.2	2.0	68.6	-0.11	3.6	1.3	16	LD						
KZBKN7	73.3	*	72.7	73.6	74.9	X	73.6	2.49	*	3.9	0.9	72.9	4.15	X	3.1	1.2	12	LD		
NCWT2P	69.3	L	71.0	L	73.6	L	69.2	L	70.8	0.85	0.8	2.1	70.9	2.18	*	1.0	1.3	16	XX	
R7XK77	70.2	70.8	72.5	71.0	71.1	1.04	2.4	1.0	69.8	1.12	3.4	1.8	16	LD						
R98HJN	66.4	65.8	69.5	68.9	67.7	-0.95	2.3	1.8	67.6	-1.13	2.7	1.2	16	LD						
UR7RAU	69.2	67.5	69.3	67.6	H	68.4	-0.53	4.4	1.0	68.1	-0.63	4.5	2.6	12	LD					
X23WU8	68.9	L	68.8	68.7	69.2	L	68.9	-0.24	1.7	0.2	L	68.2	-0.52	3.3	1.1	16	LZ			
YRQBV3	57.5	X	59.9	X	60.9	XH	61.3	X	59.9	-5.43	X	3.6	1.7	58.5	-10.21	X	3.5	2.0	16	TX

Consensus (All Labs) Results													
Wk Mean	69.01	69.18	69.22	69.17	Month Mean	69.31	Grand Mean	68.72					
Avg SDr	3.11	3.23	2.70	3.17	Avg SD	3.36	Avg SD	3.32					
SD btwn Labs	1.84	2.12	2.47	1.10	SD btwn Labs	1.73	SD btwn Labs	1.00					
Labs Incl	19	20	20	19	SD btwn Wks	1.91	SD btwn Wks	2.36					
Labs Excl	3	2	2	4	Labs Incl	21	Labs Incl	20					
Labs not Rcvd	1	1	1	0									



Containerboard Interlaboratory Testing Program
Analysis 250

Report #620 (E)
May 2021

Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium - CM11
TAPPI Official Test Method T843

Key to Instrument Codes Reported by Participants

EN	Emerson 2200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TX	TMI Digital Crush Tester (model not specified)
XX	Instrument make/model not specified by lab		



Containerboard Interlaboratory Testing Program
 Analysis 255
Ring Crush (RCT), 26 lb Corrugating Medium - CM11
 TAPPI Official Test Method T822

Report #620 (E)
May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					Inst
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	
4H9CF9	42.0	40.6	42.5	42.2	41.8	-0.51	3.0	0.8	43.5	-0.72	2.6	1.4	16	TH
7L3MQY	38.7	37.0	37.0 *	40.1	38.2	-1.80	3.2	1.5	37.6	-4.83 X	4.1	2.1	16	XX
7N9B44	45.6	46.1 H	47.9	48.1	46.9	1.30	4.1	1.3	46.1	1.06	4.3	1.5	16	LD
82PPHM	39.9	36.5	38.8 H	36.8 *	38.0	-1.87	5.5	1.6	37.5	-4.86 X	5.7	1.3	8	TC
8R2LN2	45.7	45.0	45.1	45.0	45.2	0.69	3.0	0.3	44.9	0.23	3.1	0.4 L	16	LD
9TEMWL	48.2	47.1	45.9	47.1	47.0	1.35	3.6	0.9	47.0	1.65	4.0	1.4	16	EM
DVMGRV	46.0	45.6	45.0	43.0	44.9	0.58	3.9	1.3	45.2	0.41	3.6	1.6	16	MB
E2LKUY	44.6 L	44.4 L	44.7 L	44.8 L	44.6	0.48	0.8	0.2 L	44.5	-0.02	1.3	0.3 L	16	LD
ECNTMH	42.8	43.6	43.3	42.1	42.9	-0.12	2.4	0.6	42.9	-1.16	2.9	1.2	16	LD
FAXPVW	42.4	42.6	42.8	42.9 L	42.7	-0.21	1.7	0.2 L	43.2	-0.97	1.5	1.2	16	MB
FRXYET	47.6 L	47.7 L	47.8 L	47.6 L	47.7	1.57	1.3	0.1 L	47.7	2.13 *	1.5	0.4 L	16	LC
G237UT	45.7	45.1	47.0	45.8	45.9	0.93	3.5	0.8	46.2	1.09	2.9	1.5	16	LC
GJK74W	45.0	44.5 H	46.0 H	44.1	44.9	0.58	5.0	0.8	45.9	0.89	4.3	1.2	16	LZ
J992CQ	43.6	44.6	40.2	42.2	42.6	-0.23	2.7	1.9	43.4	-0.80	3.2	1.8	16	LD
JQUBNT	41.4	39.4	41.3	38.4	40.1	-1.12	2.4	1.5	45.6	0.68	2.4	8.8 H	16	TU
JYJDGN	43.6	36.8	41.1	42.5	41.0	-0.80	3.8	3.0	44.5	-0.03	3.9	3.0	16	LZ
KC9C9Q	36.8 *	37.4	39.2	35.6 *	37.3	-2.14 *	2.2	1.5	36.6	-5.50 X	2.3	1.3	16	TH
KU8HMC	41.1	43.1	43.1	42.6	42.5	-0.28	3.7	0.9	43.1	-0.99	3.7	1.4	16	LD
KZBKN7	46.0	44.0	44.1	44.8	44.7	0.52	3.7	0.9	45.3	0.51	3.5	1.2	12	XX
LLREUH	45.5	43.9	46.5	45.3	45.3	0.72	3.3	1.1	45.1	0.34	3.1	1.7	16	LD
NNDHYV	42.3	44.9	44.6	42.9	43.7	0.15	3.3	1.3	43.7	-0.62	3.3	1.3	4	LD
P2WPA2	45.3 L	44.5	45.2	44.2	44.8	0.55	2.3	0.5	45.1	0.33	2.5	1.9	16	LC
PYZFQJ	42.8	41.5	40.5	46.0	42.7	-0.20	2.4	2.4	42.5	-1.44	2.5	1.9	16	LZ
QAJXDN	47.5	43.6	48.4	45.1	46.2	1.03	2.7	2.2	46.2	1.11	3.4	1.5	16	LD
R7XK77	45.1	43.3	47.2	44.5	45.0	0.62	2.8	1.6	45.3	0.50	2.9	1.7	16	LD
VWHXLV	37.0 *H	34.3 *	45.8	35.3 *H	38.1	-1.84	5.8	5.3 H	41.7	-1.98 *	4.8	5.5 H	16	LD
VXDFPG	41.4	40.4	45.9	45.6	43.3	0.02	3.0	2.8	44.2	-0.25	3.4	2.2	12	EM
WF6X4B	41.6 H	41.9	43.7	44.5	42.9	-0.12	4.1	1.4	44.0	-0.42	3.8	1.6	16	LZ
YGXJXD	44.1	44.3	44.2	44.4	44.3	0.35	3.0	0.1 L	44.2	-0.28	2.7	0.4 L	12	LD
YRQBV3	38.9	42.0	40.3	39.4	40.2	-1.11	3.4	1.4	42.2	-1.63	3.4	2.0	16	TX
ZCBJTH	44.1	45.6	46.4	47.1	45.8	0.90	5.1	1.3	45.1	0.37	4.7	1.6	16	XX



Containerboard Interlaboratory Testing Program
 Analysis 255
Ring Crush (RCT), 26 lb Corrugating Medium - CM11
 TAPPI Official Test Method T822

Report #620 (E)
May 2021

Consensus (All Labs) Results									
Wk Mean	43.29	42.62	43.91	43.22	Month Mean	43.26	Grand Mean	44.57	
Avg SDr	3.33	3.49	3.40	3.50	Avg SD	3.43	Avg SD	3.30	
SD btwn Labs	2.95	3.34	2.94	3.31	SD btwn Labs	2.81	SD btwn Labs	1.45	
Labs Incd	31	31	31	31	SD btwn Wks	1.68	SD btwn Wks	2.47	
Labs Excld	0	0	0	0	Labs Incd	31	Labs Incd	28	
Labs not Rcvd	0	0	0	0					

Key to Instrument Codes Reported by Participants

EM Emerson 1200 Series LD L&W Crush Tester 248 MB Messmer Buchel K440 TH TMI Compression Tester, Model 17-76 TX TMI Digital Crush Tester (model not specified)	LC L&W Crush Tester 48 LZ L&W Crush Tester (model not specified) TC TMI Monitor/Compression Tester, 17-37 TU TMI Universal Crush Tester (TMI K440) XX Instrument make/model not specified by lab
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Containerboard Interlaboratory Testing Program
 Analysis 261
STFI, 26 lb Corrugating Medium - CM11
 TAPPI Official Test Method T826

Report #620 (E)
May 2021

WebCode	Weekly Means				Monthly Results				Cumulative Results					
	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SD	SD Wks	Mean	CPV	SD	SD Wks	Wks	Inst
2AMAHV	13.9 L	14.0 L	14.0 L	13.9 L	13.9	0.02	0.4	0.1	13.8	-0.14	0.4	0.1	L 16	LA
7GAQYM	13.2	13.8	13.9	13.2	13.5	-0.72	1.3	0.4	13.7	-0.46	1.2	0.5	16	LU
7K92VM	13.0	12.5 *	12.8 *	13.0	12.8	-2.07 *	1.2	0.3	13.2	-1.51	1.0	0.4	16	XX
7N9B44	13.5	13.1	13.7	13.1	13.4	-1.05	0.9	0.3	13.5	-0.96	1.1	0.3	16	LB
82PPHM	13.3	12.9	13.6	12.2 *	13.0	-1.70	1.0	0.6	13.2	-1.54	1.1	0.5	8	TS
8A2V8Y	13.9	13.9	14.5	14.6	14.2	0.57	1.1	0.4	14.6	1.38	1.1	0.5	16	LA
8R2LN2	14.0	13.7	13.8	13.9	13.9	-0.11	1.2	0.1	13.9	-0.11	1.2	0.1	L 16	LB
CBXZN3	14.2	14.1	13.9	14.1	14.1	0.29	1.0	0.1	14.2	0.69	1.0	0.6	16	LU
CUDARN	14.1	14.3	14.6	14.9	14.5	1.06	1.1	0.4	14.3	0.77	1.1	0.5	16	LH
DFTYQ4	14.3	14.3	15.0	14.3 H	14.5	1.06	1.2	0.3	14.6	1.38	1.2	0.3	8	LA
DJA6ME	13.5	13.1	13.8	13.9	13.6	-0.69	1.0	0.4	13.7	-0.35	1.1	0.4	16	LA
DVMGRV	14.1	15.0	13.5	14.7	14.3	0.77	1.1	0.7	14.5	1.12	1.8	0.6	16	LA
ECNTMH	14.4	14.9	14.5	14.6	14.6	1.24	1.1	0.2	14.4	0.93	1.1	0.3	16	LA
FJQ3VW	No DATA	13.9 L	13.6	No DATA	13.8	-0.29	1.0	0.2	13.5	-0.82	1.1	0.4	14	LA
G237UT	14.1	13.2	14.2	13.5	13.8	-0.28	1.0	0.5	13.9	0.01	1.0	0.4	16	LU
J77UKY	13.9	14.5	14.0	13.6	14.0	0.18	1.0	0.4	13.9	0.00	1.1	0.3	16	TT
J992CQ	13.6	13.7	13.2	13.7	13.5	-0.70	1.1	0.2	13.5	-0.79	1.1	0.3	16	LZ
JJBA6A	14.0	13.8	12.9 L	13.5	13.5	-0.70	0.9	0.5	13.7	-0.44	0.9	0.4	16	LB
NCWT2P	14.0	14.7	13.9	14.7	14.3	0.77	1.1	0.4	13.7	-0.37	1.1	0.7	16	XX
NNDHYV	8.7 X	7.4 X	8.4 X	10.2 X	8.7	-9.78 X	1.1	1.1 H	8.7	-10.87 X	1.1	1.1 H	4	LZ
P2WPA2	14.1	14.7	14.6 L	14.6	14.5	1.10	1.0	0.2	14.5	1.16	1.1	0.3	16	LH
PYZFQJ	14.0	16.0 X	15.1 *H	13.6 H	14.7	1.41	1.5	1.1 H	14.8	1.87	1.5	0.7	16	LA
VVHXLV	15.7 X	14.2	14.0	15.5 *	14.9	1.75	1.3	0.8	14.6	1.38	1.2	0.8	16	LA
VWY7LH	12.8 *	13.7	13.8	14.1	13.6	-0.59	1.0	0.6	13.4	-0.98	0.9	0.4	16	LH
WF6X4B	14.4	14.6	14.0	14.0 L	14.3	0.62	1.0	0.3	13.7	-0.35	1.0	0.5	16	LA
XLAZWH	14.0	14.2 H	13.7	13.9	14.0	0.07	1.3	0.2	14.1	0.29	1.2	0.3	11	LA
XZ9BYU	14.3	13.2	13.9	13.6	13.8	-0.28	0.9	0.5	13.8	-0.29	0.9	0.4	16	LB
YRQBV3	13.2 H	13.0	13.1	12.6	13.0	-1.76	1.4	0.3	13.0	-1.85	1.2	0.4	16	LH

Consensus (All Labs) Results													
Wk Mean	13.83	13.89	13.92	13.90	Month Mean	13.92		Grand Mean	13.92				
Avg SDr	1.09	1.08	1.11	1.05	Avg SD	1.09		Avg SD	1.12				
SD btwn Labs	0.45	0.67	0.57	0.73	SD btwn Labs	0.54		SD btwn Labs	0.48				
Labs Incl	25	26	27	26	SD btwn Wks	0.44		SD btwn Wks	0.45				
Labs Excl	2	2	1	1	Labs Incl	27		Labs Incl	27				
Labs not Rcvd	1	0	0	1									



Containerboard Interlaboratory Testing Program
Analysis 261
STFI, 26 lb Corrugating Medium - CM11
TAPPI Official Test Method T826

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Key to Instrument Codes Reported by Participants

LA	L&W Autoline	LB	L&W Model 152
LH	L&W 282	LU	L&W 52 without moisture correction (was 53)
LZ	L&W (model not specified)	TS	TMI Monitor/STFI Compression Tester, 17-33
TT	TMI Short Span Compression, 17-34 (MB K455)	XX	Instrument make/model not specified by lab

End of Report